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WOOD

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APRIL 1985•ISSUE NO. 4
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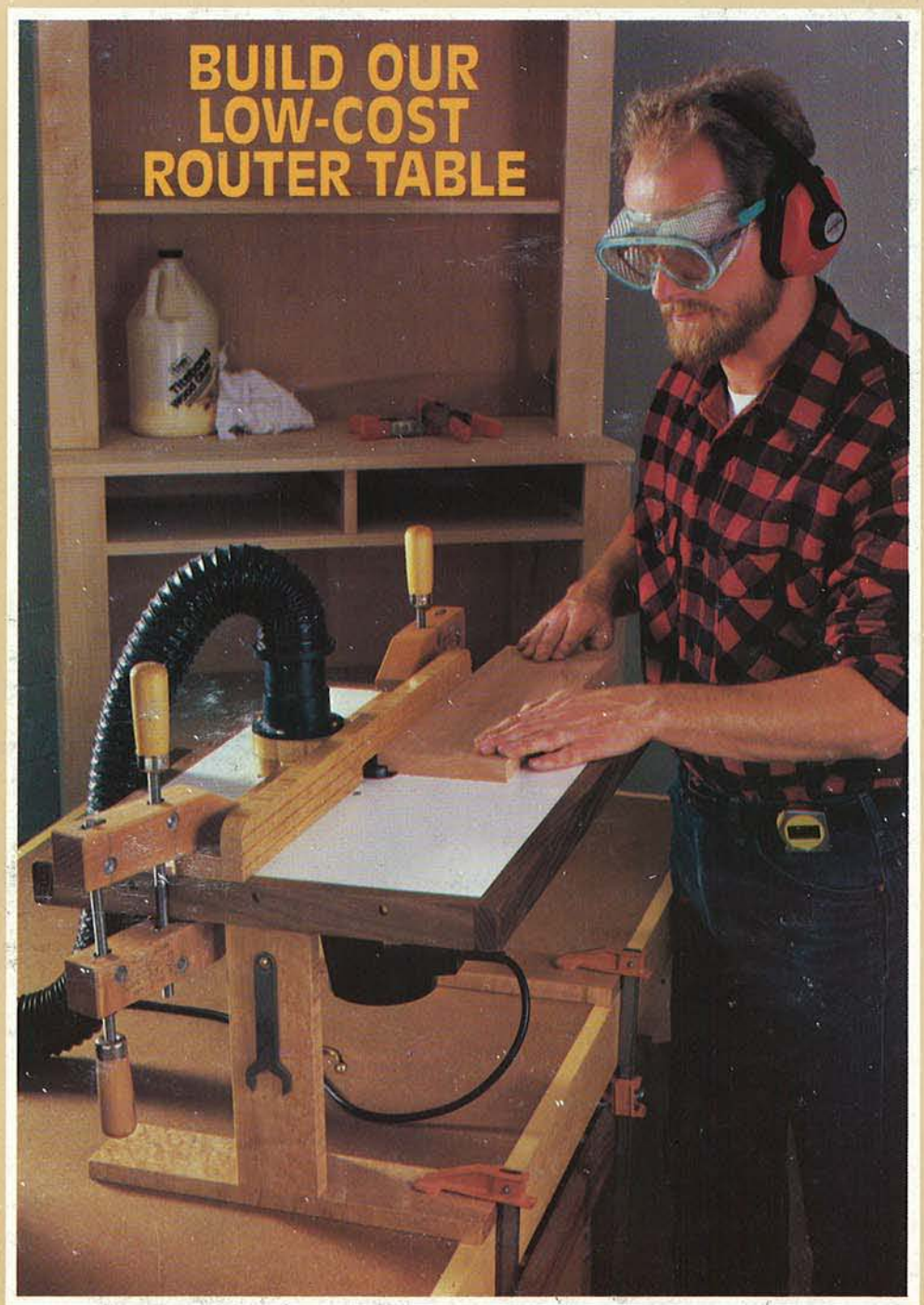
- **SHOP-TESTED** how to apply flexible wood veneer
- **TABLE SAWS** choosing the right one for your shop
- **WOOD CARVING** a simple horse for first-timers
- **LOTS OF PROJECTS**
  Shaker cupboard
  waterfall table
  modular workbenches
  hall table



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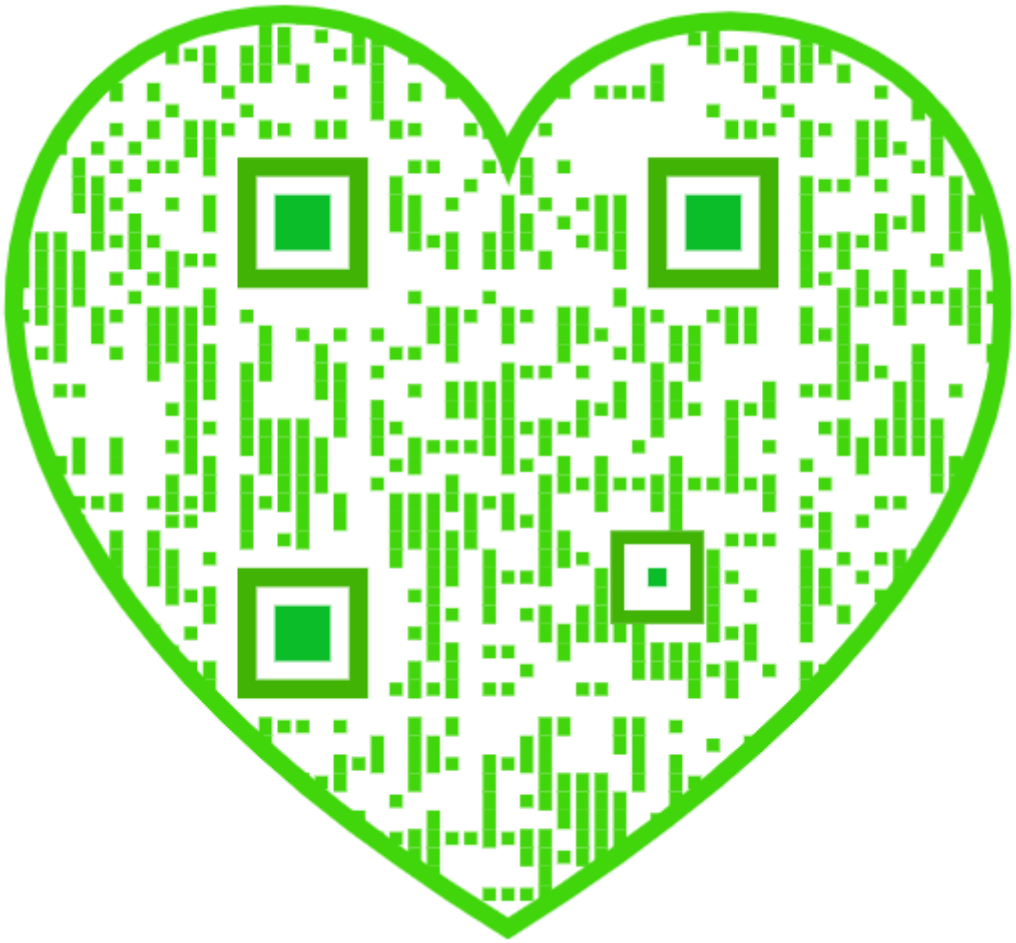

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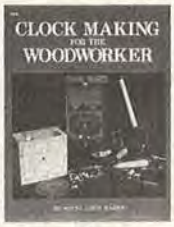

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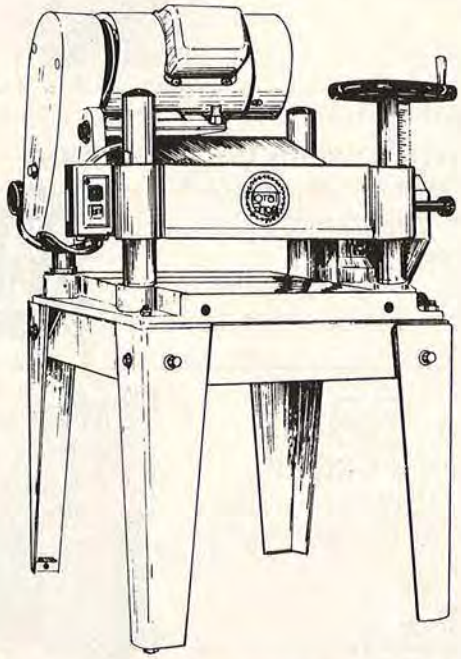

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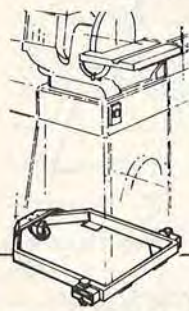

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THE MAGAZINE FOR HOME WOODWORKERS

APRIL 1985 **ISSUE NO. 4**

WOOD PROFILE

CHERRY 27

Learn why this native American hardwood has found such favor among furniture makers for so many years

FURNITURE PROJECT

TRADITIONAL-STYLE HALL TABLE 28

Simple, straightforward design and the charm of genuine cherry wood combine to create a furniture piece of extraordinary beauty

HOMEMADE TOOLS

OUR LOW-COST, LAST-FOR-A-LIFETIME ROUTER TABLE 32

If you think your router does a lot for you already, just wait until you team it up with this easy-to-build accessory

TOOLS AND TOOL COLLECTING

OLD NEWFANGLED WOODWORKING MACHINES 35

In the 1880s and '90s lots of professional woodworkers looked to these ingenious tools to maintain that competitive edge

GREAT IDEAS FROM OUR SHOP

ANY-WAY-YOU-WANT-IT MODULAR WORKBENCH GROUP 38

Mix-and-match these 24"×24" modules for a truly efficient workshop work center with storage space galore

SHOP-TESTED TECHNIQUES

WORKING WITH FLEXIBLE WOOD VENEERS 45

If you haven't yet worked with this paper-thin wood product, you're missing out on some exciting new options in woodworking

NOW YOU CAN BUILD IT

"GIFT-WRAPPED" TISSUE BOX COVER 50

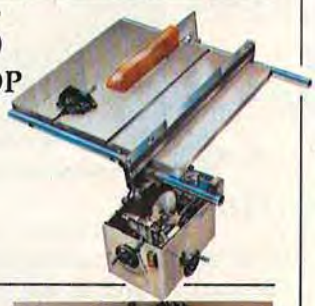
OVER-EASY WATERFALL TABLE 51

Two fun-to-build, useful projects that not only look great when they're finished but also help sharpen your veneer-application skills

TOOL BUYMANSHIP

TABLE SAWS: HOW TO CHOOSE THE RIGHT MACHINE FOR YOUR SHOP 55

Stationary saw or bench-top model, domestic or import, materials and machining, power-drive mechanisms, rip fence options, the matter of motors, and more helpful buymanship information



FURNITURE PROJECT

SHAKER-STYLE CUPBOARD 59

This back-to-basics rendition of a Shaker classic features the frame-and-panel construction these excellent woodworkers loved

FINISHING AND REFINISHING

EASY WAYS TO MAKE THAT OLD FINISH LOOK LIKE NEW AGAIN 66

Before you get out the rubber gloves, respirator, and finish stripper, consider some options that may save you lots of toil

CRAFTSMAN CLOSE-UP

HARLEY REFSAL AND HIS SCANDINAVIAN-STYLE CARVINGS 70

Read about how (and why) this accomplished wood carver depicts the hard realities of life of early Scandinavian immigrants

SHORT-SUBJECT FEATURES

Letters to the Editor 8
Tips From Your Shop (And Ours) 10
News and Events 18
Books Worth Reading 22
Associations You Should Know About 24
Old Hand Ways 54
The WOOD Magazine 3-ring binder jig 67
Project Showcase 68
Products That Perform 79
Saguaro—The World's Slowest-Growing Tree 83

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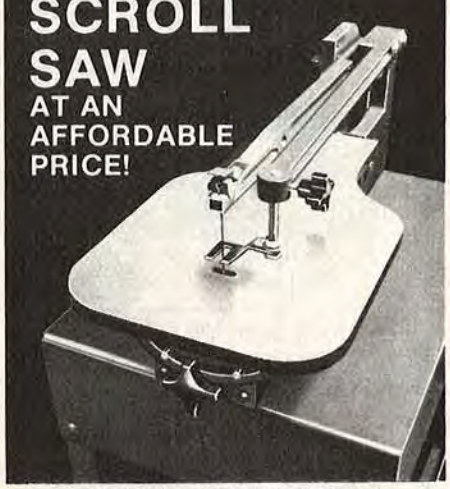

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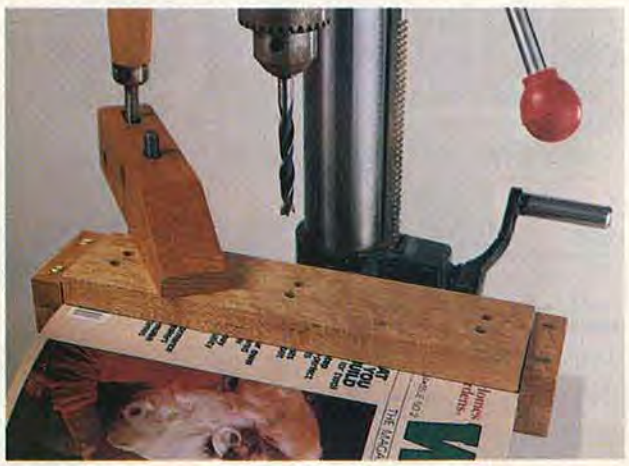
The Editor's Angle



The bind-your-own ring binder jig

A big thanks to all of you who took the time to respond to our questionnaire in Issue 1. I appreciate your input as well as that from other readers who have been sharing their thoughts as to what they want to see more of in future issues of WOOD.

I had hoped all along that many of you would want to save past issues of WOOD as reference. So it was reassuring to hear that many of you intend to do just that. One subscriber, Raymond Dobelstein, from Flemington, New Jersey, even developed a jig (shown above) that allows you to drill binder holes in each issue. I liked the idea so much I purchased it from Ray. If you're interested in building a ring-binder jig—it's easy to do—see page 67. In Issue 5, we'll show you how to make a nifty wooden binder to hold your back issues.

Speaking of great ideas, remember that we're always on the lookout for well-designed projects to present in the magazine. If you've designed and built a project you want WOOD to consider for publication, I'd like to hear from you. Obviously, if you can send along a snapshot of the project, that will allow me to more clearly see what you have in mind.

One thing about the questionnaire results that did surprise me, though, is how few women responded. I know you're out there, ladies; let me hear from you. This magazine is for you, too, you know.

And speaking of ladies, my wife thinks that just because I'm Editor of WOOD, I can spend all my time building all those things she's been after me to build during our 14 years of marriage. (I'd love to, dear, but I'm just too busy putting out this magazine. Maybe later!) Sometimes I'm afraid to show her the latest issue; she's always finding something she likes. Here's hoping you do, too.

Print this article

Larry Clayton

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Jay Hedden, Editor, Workbench Magazine

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Quickley converts machine to one of the finest drum sanders available. Consistent power feed eliminates "low spots" and irregularities caused by hand sanding method.

Factory-Direct Shipment Keeps Cost Low!
Woodmaster Tools is the exclusive national direct-by-mail source for these planers. Low price includes motor, switch, stand, knives, full instructions ... ready to use. Easy terms.

Jointer attaches in seconds ... designed to let you move directly to planing without changeover.

Produces tongue & groove with one set-up, two boards in same pass.

Turns out high-value, satin-smooth custom moldings plus all popular patterns.

New sanding attachment quickly converts machine to a power-feed drum sander!

FREE 30 DAY TRIAL!

Send for complete facts on how you can try this low-cost, 4-in 1 power tool in your own shop for 30 days completely without risk! We'll also send you complete details on how you are fully protected by Woodmaster's One Full Year Limited Warranty.

MAIL COUPON TODAY OR CALL TOLL-FREE 1(800) 824-7888 Oper. 642

FREE INFORMATION KIT

Woodmaster Tools, Dept. PW5, 2908 Oak, Kansas City, MO 64108

YES! Please rush me your FREE Information Kit which tells in words and pictures why this amazingly designed power-feed shop is so much better than other single-purpose or combination tools. Also send me details on your 30-DAY FREE TRIAL GUARANTEE.

Woodmaster Tools, Dept. PW5, 2908 Oak, Kansas City, MO 64108

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

LETTERS

We welcome comments, criticisms, suggestions . . . even an occasional compliment from readers. While the volume of mail we receive makes it impossible to answer every letter, we intend to publish excerpts from a cross section of our correspondence in each issue of the magazine. Send letters to:

Letters Editor
Better Homes and Gardens®
WOOD Magazine
1716 Locust Street
Des Moines, IA 50336

(Regarding submitting material for consideration for Project Showcase) I have several projects and ideas to submit, but I do have one problem. I do not own a 35-mm camera. All I use is a regular camera, which provides good colored pictures. Would this be acceptable for publication?

—James D. Ebentier, Glenshaw, Pa.

In rare instances, when we receive a color print of exceptional quality, we do accept it for publication. But because of the detail- and quality-loss normally associated with making a printed image from a color print, we much prefer using slides.

On the other hand, if you just want to share an idea with us and want to include a snapshot, that's fine. We've bought several project ideas from readers already, and are anxious to buy more.

Why can't more of the advertisements include the price of the tool (or other item for sale)? It seems a waste of time to have to write a letter to determine if the price is out of my range.

—John L. Reininger, San Antonio, Tex.

We really don't have a good answer for you on this one. We do know, though, that mail-order advertisers depend greatly on having a current list of names of potential customers. We agree with you that it is a hassle to have to write to manufacturers, but consider this. Once an advertiser has your name on file, chances are good that the firm will keep you abreast of product introductions, special offers, and so forth. And we think that's worthwhile to you as a reader.

In the diagram showing how to make the bracelet mandrel ("Designer Bracelets," WOOD, Sept./Oct. 1984, page 75), the expansion plug is to be tapered, but you have the same diameter dimension on both ends.

—Donald Brinton, Carlisle, Pa.

The plug should taper from 2¼" to 1½" in diameter.

Professional and Portable

- Heavy duty router/shaper offers affordable flexibility with most router bits.
- Equipped with a 1½ H.P. motor but will accommodate all Porter-Cable motors including the 3 H.P. production unit.
- Individually adjustable fences with micro adjustments for complete cutting accuracy.
- Dual starting pin holes for versatile free-hand routing.
- Safety lockable switch.

For more information consult the Yellow Pages under Tools (electric) for your local Porter-Cable Professional Tool Distributor or write for a free, full line product and accessory catalog.

Quality By Design
PORTER-CABLE
PROFESSIONAL POWER TOOLS
P.O. Box 2468 • Advertising Dept. • Jackson, TN 38302-2468

TALKING BACK

I have never written a letter of complaint or praise to any company. Add that to the fact that I have never done any woodworking, and it becomes amazing that I have been reading a copy of WOOD for *three days!* Reading has always been one of my real pleasures, and your staff has done a wonderful job with this publication.

—Bruce P. Hawkins, LaSalle, Ill.

We're thrilled to hear that you enjoyed your first encounter with WOOD. Watch out, Bruce, you may be on your way to becoming a woodworker. It's habit-forming, you know!

I found the first issue of WOOD to be overly basic and redundant. Basic- and intermediate-level articles should be balanced with advanced projects and techniques.

—F. A. Rudolph, Falls Church, Va.

I think I would like to see more for the beginner.

—John J. Nicholson, Schenectady, N.Y.

The ultimate test for any publication is whether or not it serves its audience well over a long period of time. We know that each reader expects a little something different from us. And that's why we have so many subject categories in the magazine. We will continue to strive to serve up a balanced ration of articles that will please the more advanced as well as those who are just starting out in this wonderful hobby.

Don't split up the articles over several pages because of advertising. This irritates me and I am sure it does others, too.

—David W. Black, Portsmouth, Va.

Whenever possible, we try to present our articles in their entirety on consecutive pages, especially the woodworking projects. But sometimes, to tell the whole story, which we feel strongly we should do, an article may have to be continued toward the back of the magazine. We do share your concern. ■

Our catalog doesn't just sell you things. It teaches you things. The Garrett Wade Catalog is a new, 212-page collection of woodworking hand tools, machinery, finishing supplies and accessories that are simply the finest available. Anywhere.

And besides offering quality tools from around the world, we also give you a lot of quality advice. On woodworking techniques. On picking the proper tool for a particular job. On finishing, sharpening, clamping and more.

The catalog is filled with superb photography, honest specifications and reliable descriptions. It's neatly divided into seventeen sections, including a section on our Swiss INJECTA INCA power tools. And throughout the year, our catalog owners will receive several handy supplements–*free of charge.*

Just send in the coupon below with $3.00, and we'll send out your copy of the 1985 Garrett Wade Catalog. It just may prove to be the most useful tool you own.

Garrett Wade Co., Dept. 239
161 Avenue of the Americas
New York, N.Y. 10013
Gentlemen:
Send your complete 212-page catalog of woodworking tools, machinery, and accessories. Enclosed is $3.

☐ I would like *only* the following sections of the catalog, for 50¢ each:
☐ INJECTA INCA ☐ Carving ☐ Finishing

Enclosed is $_____

Name_____

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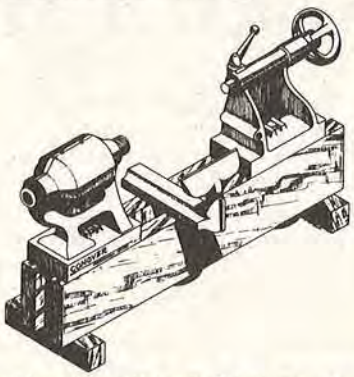
CONOVER

Woodcraft Specialties, Inc.
18121 Madison Road, Parkman, OH 44080
216/548-3481

Tradition is Back with

THE CONOVER LATHE SET



We manufacture the Conover lathe set in our Parkman, Ohio factory to insure its super high quality. It has heavy cast iron construction, precision Timken roller bearings, a 16" swing, and unlimited center distance. You can set it up as a bowl lathe or turn porch posts—your option!

The Conover Lathe Set is mounted on a bed of 8 quarter timbers, which you can make yourself—to any length. A wood bed absorbs shock better than metal and facilitates an affordable price. Our lathe indexes to 12 positions and is suitable for heavy face plate turning (inboard and outboard), metal spinning, and spindle turning. It has a full range of exciting accessories.

OK Conover,

_____ Enclosed is $1 for your 16-page catalogue detailing the Conover Lathe Set and your entire line of handmade tools.

_____ Send me _____ Conover Lathe Set(s) @ $895 each.

Enclosed is _____ Cheque _____ M.O. _____ MasterCard/Visa

Card #_____ Exp. Date_____

Name_____

Address_____

City_____ State_____ Zip_____

Phone_____

TIPS FROM YOUR SHOP (AND OURS)

In woodworking, no one knows it all. But through experience, we all run onto better, safer, faster, or easier ways to do things. When we come up with interesting tips or techniques, we'll show them to you in this column. And when you share your favorites, we'll pay you $25 for each submission we publish. **No shop tips will be returned.** Send your tips to:

Shop Tips
Better Homes and Gardens®
WOOD Magazine
Locust at 17th
Des Moines, IA 50336

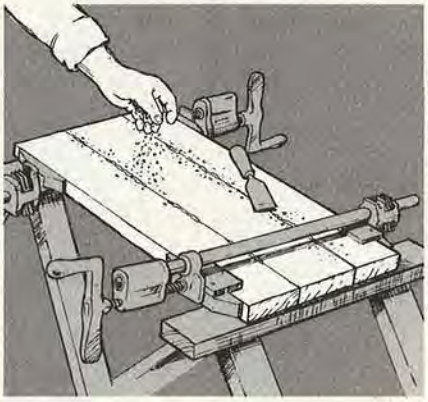
Print this article

Blot up squeezed-out glue

Some glue squeeze-out is normal when clamping joints, but letting it dry makes it tough to remove later.

TIP: Sprinkle coarse sawdust along the joint to blot up the freshly squeezed-out, wet glue, then scrape or wipe it up immediately. Follow with a handful of fine sawdust rubbed into and over the area to pick up remaining glue particles you missed the first time.

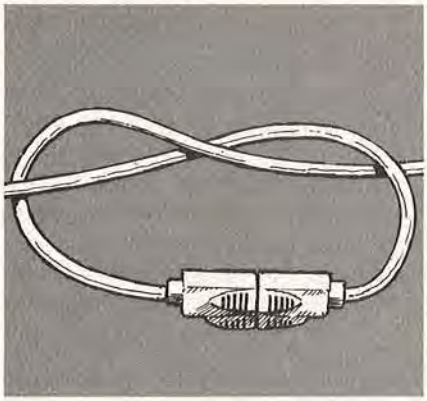
—Paul Branton, Mt. Olive, Miss.



Keeping plugged in

How many times have you been left powerless when using a portable sander or saber saw because the tool cord and the extension cord pulled apart? Now you can stop this frustration with this simple trick.

TIP: Tie a loose overhand knot with the two cords and plug them together. Tension on the knot tightens the union and the power connection stays together.



$1000 A Month With Just A Hack Saw!

© Philip E. Brancato Sr. 1982

Yes, you can make $1000 a month and more with just a hack saw in your spare time.

Will I Get Rich?

No, you will not get rich, but you can make over $1000 a month in your spare time and have a ball doing it.

I tried all those "Get Rich" gimmicks that are advertised, that never tell you anything until you've sent them your $25, and then you find out their gimmicks were not for you. Well, I've tried them all and I'm still not rich.

All I ever wanted was something I could do in my spare time with my hands, make a little money and enjoy myself and not have to buy $3000 worth of tools or merchandise to do it.

Believe It Or Not

I found the most enjoyable and profitable business working with my hands and the only tools I use are a hack saw and measuring tape. The really nice thing about it is any man, woman or ten-year-old can do it.

What Do I Do?

I make beautiful indoor/outdoor P.V.C. pipe furniture. Such as chairs, lounges, tables, swings, and all kinds of baby furniture out of P.V.C. pipe; even birdhouses and feeders. P.V.C. pipe furniture is the hottest selling furniture on the market today, because it is unique and beautiful and will not rot or rust and it will virtually last a life time.

Profit Unbelievable!

The fantastic part of this business is the profit.

Just go look at some of this furniture in the stores and see some of the unbelievable prices it is selling for.

A chaise lounge that costs $62.25 in material and three hours of work is selling for over $189 in the stores. I can sell my chaise lounge for anything I think my labor is worth.

Where can you buy the P.V.C. Pipe?

You can buy the P.V.C. pipe from any local hardware store to start. Plus I will supply you with the name and address of one of the largest manufacturer of pipe, fitting, cushions, and table tops who will sell to you at wholesale prices and you do not have to buy a minimum amount. You can buy one cushion or 50 plus I will supply you with my shop manual and six detailed shop drawings with pictures and measurements of six different designs.

Do you need my shop drawings?

No, you don't need my shop drawings unless you want to save hundreds of hours of trial and error work and thousands of dollars that I had to spend before I finally found the right design and measurements and tricks to the manufacturing of P.V.C. pipe furniture. I only wish that when I started, I could have bought these shop drawings and I would have gladly paid $100 for just one of them.

I will pay you!

Yes, I will pay you $25 for any unique design shop drawing that I can use in my collection and workshop manual.

How do you start?

1) Decide if you like to work with your hands to create things *and want to make money.*

2) Can you afford $12.00 for my shop manual and six drawings.

3) Send me your name and address along with your check for $12.00 to:

Philip E. Brancato Sr.
P. O. Box 237WO-1
Riverview, Florida 33569
(813) 677-6948

Please allow about two weeks for delivery.

TIPS FROM YOUR SHOP (AND OURS)

Recycling paint thinner

It seems a waste to discard paint thinner after using it only once for cleaning brushes.

TIP: Recycle that thinner for additional cleanup jobs by storing it in a coffee can with a sealable lid. In a few days, the solids settle out, so you can pour most of the reusable thinner off the top and discard the remaining goo.

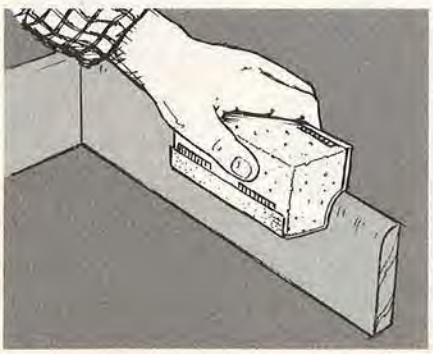
—Jack Mitchell, Concordia, Kans.

Pliable sanding blocks

It's darn-near impossible to evenly sand the surface of millwork, such as quarter round or cove moldings, with conventional flat-faced sanding blocks.

TIP: Custom-make sanding blocks for specific jobs, using scraps of polystyrene foam (used for packing material or insulation). Carve or press the foam to the desired shape and fasten sandpaper with double-sided carpet tape. The blocks then fit anything you wish to sand and they're easy to make as you go along.

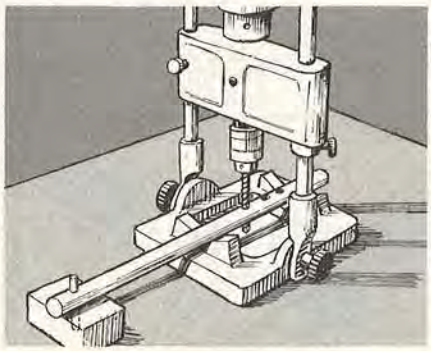
—Norm Pedersen, Salt Lake City, Utah



Round stock drill guide

Drilling a lot of holes in line with one another and perpendicular to the same plane can be a real challenge in round stock.

TIP: Cut a scrap wood block large enough to level with the bottom of the V-shaped notches on your drill guide base. Then place one end of the round stock into the guide and place the block under it. Drill through the stock and into the block. Now move the pieces out from under the drill guide and pin them together with a short dowel. As shown in the drawing, you'll now be able to drill as many holes as you need, where you want them, by simply positioning the block the appropriate distance away from the drill each time.



Avoid sanding gouges

Catching the power cord of a belt sander on the edge of a workpiece while you're sanding almost guarantees an ugly gouge.

TIP: Drape the cord over your shoulder to keep it up and out of the way and to prevent sudden halts.

Continued on page 12

Woodworkers' Hardware ORDER FORM

Qty. Total

Birch Mug Peg ~~$ .37/ea.~~ $ .22/ea.

Birch Shaker Peg ~~$ .42/ea.~~ $ .25/ea.

Birch Furniture Spindles 6 inch ~~$ .70/ea.~~ $ .42/ea.

8 1/2 inch ~~$ .85/ea.~~ $ .51/ea.

#S4 Galley Spindle 1 9/16"

Birch ~~$ .28/ea.~~ $ .17/ea.

Oak ~~$ .34/ea.~~ $ .20/ea.

#S5 Galley Spindle 1 7/8"

Birch ~~$ .41/ea.~~ $ .25/ea.

Wood Wheels

3/4" ~~$5.95/C~~ $3.57/C

7/8" ~~$7.95/C~~ $4.77/C

1" ~~$8.33/C~~ $5.00/C

1 1/4" ~~$13.35/C~~ $8.01/C

1 1/2" ~~$18.35/C~~ $11.01/C

2" ~~$30.00/C~~ $18.00/C

#AP1 Axle Peg Fits 1" to 2" Wheel ~~$6.95/C~~ $4.17/C

Wood Cargo (Milk Can, Oil Drum, Pickle Barrel)

Oil Drum ~~$3.85/10~~ $2.31/10

Milk Can ~~$3.00/10~~ $1.80/10

Pickle Barrel ~~$3.85/10~~ $2.31/10

Screw Hole Buttons

3/8" ~~$2.90/C~~ $1.74/C

1/2" ~~$2.95/C~~ $1.77/C

Dowel Pins 3/8"x2" ~~$2.95/C~~ $1.77/C

Wood Knobs w/Screws

3/4" ~~$1.50/10~~ $.90/10; ~~$2.95/C~~ $1.77/C

1" ~~$2.40/10~~ $1.40/10; ~~$21.40/C~~ $12.84/C

1 1/4" ~~$2.50/10~~ $1.50/10; ~~$23.00/C~~ $13.80/C

1 3/4" ~~$3.70/10~~ $2.20/10; ~~$34.65/C~~ $20.79/C

Saw Tooth Hangers ~~$6.95/C~~ $4.17/C

Brass Plt. Picture Hanger ~~$7.95/C~~ $4.77/C

Clock Movements w/Hands Q72 ~~$10.80/ea.~~ $6.48/ea.; ~~$49.50/5~~ $29.70/5

Lazy Susan Bearing

3" ~~$1.15/ea.~~ $ .69/ea.

4" ~~$1.60/ea.~~ $ .96/ea.

6" ~~$2.89/ea.~~ $1.73/ea.

12" ~~$8.95/ea.~~ $5.37/ea.

Brass Plated Candle Cup ~~$5.00/10~~ $3.00/10; ~~$49.00/C~~ $29.40/C

Brass & Porcelain Hook ~~$4.95/ea.~~ $2.97/ea.

Brass Plated Hinges

#910 Butt Hinge ~~$1.65/ea.~~ $.99/ea.

#928 Butt Hinge Brass ~~$2.80/10~~ $1.68/10

#F124 Screw for Above ~~$4.00/C~~ $2.40/C

Clipboard Clips

3" ~~$ .59/ea.~~ $ .35/ea.

6" ~~$ .99/ea.~~ $ .59/ea.

Plastic Shelf Pins ~~$9.00/C~~ $5.40/C

Note: C = 100

☐ Catalog $1.00 or free with order — Total Order

☐ Minimum Order is $25.00 — MN Res.- 6% Tax

Order Amount :	Shipping :
$25.00 to $49.99	$3.50
$50.00 to $99.99	$4.50
Over $100.00	$5.00

Shipping

Total Enclosed

☐ Visa ☐ Master Card

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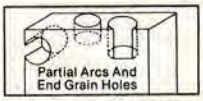
MEISEL HARDWARE SPECIALTIES

P.O. Box 258 R Mound, Minnesota 55364 • (612) 472-5544

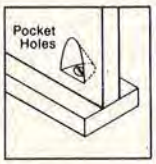
Grizzly™

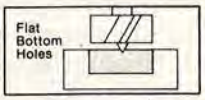
FORSTNER BITS MADE IN AUSTRIA!

We will not be undersold by anyone even though our Forstner bits are of the highest quality available.



Bore clean, effortless holes in any wood (even thin stock, veneer, end grain and knots!). These bits will make all other wood bits in your shop obsolete.





MODEL	SIZE	PRICE EACH	
G1260	3/8"	$ 5.50	Prepaid to you
G1261	1/2"	$ 6.25	Prepaid to you
G1262	5/8"	$ 7.00	Prepaid to you
G1263	3/4"	$ 7.75	Prepaid to you
G1264	7/8"	$ 8.50	Prepaid to you
G1265	1"	$ 9.25	Prepaid to you
G1266	1 1/8"	$10.00	Prepaid to you
G1267	1 1/4"	$10.75	Prepaid to you
G1268	1 3/8"	$11.50	Prepaid to you
G1269	1 1/2"	$12.50	Prepaid to you
G1270	1 5/8"	$14.00	Prepaid to you
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G1272	1 7/8"	$17.00	Prepaid to you
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Buy the complete set and save $38.45!

15 pc. set from 3/8" to 2 1/8" inclusive.

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We ship real fast . . . **TRY US.**

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Planecraft:
A Woodworker's Handbook

If you are a woodworker, you must own this incredible book! ***$9.95***

The definitive guide to one of woodworking's essential tools—the amazingly versatile plane. Step-by-step, plane after plane, master craftsman John Sainsbury provides meticulous instructions for beginner and seasoned pro alike to use an incredible variety of these marvelously efficient hand and power tools. With almost 300 easy-to-understand photos, diagrams and drawings and an information-packed 192 pages, learn how to assemble, adjust, sharpen, handle, set up and care for dozens of different planes—some ancient, others brand new—and best of all learn to use each to complete a wide variety of tasks. Discover how to:

- cut a groove or wide rebate
- make a raised panel
- fit drawers
- make mitred boxes
- create decorations
- square a piece of wood
- make several moulding styles
- make a butt, tongue & groove, dowel, corner, joints and more
- start mortises for haunched tenons
- make multiple reeds
- make return beads or toros
- make doors
- frame panels of doors
- lipping and facing
- many decorative applications
- the history of planes and technical advances

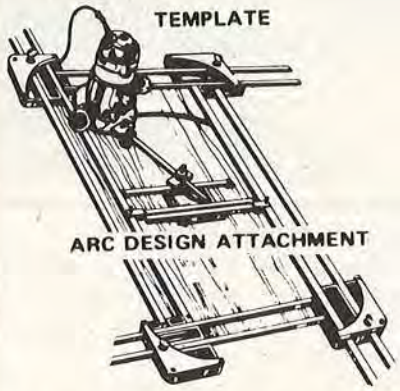
Whether you own or are buying any plane—block, rebate, plow, combination or multi, circular router, power or even a scraper—this book has all the information, even down to comparisons between manufacturers and models. Nothing is omitted, no basic operating procedure or specialized technique—making this a shop reference you can't afford to be without.

He covers every difficulty in planing, from simple problems like ridges on the planed surface (a result of poor sharpening techniques) to shooting an edge at various angles, with complete solutions. Plus—every contemporary plane maker, with technical analysis of each, and including a complete glossary.

Bonus! Projects galore. Each described with maximum clarity, step-by-step, with incomparable sequential drawings.

This book is invaluable. If you are a woodworker, you must have this in your library. **Act now! Send your check for only $9.95 (an incredible value) and we'll ship your book postage free.**

STERLING PUBLISHING CO., INC. DEPT. WD2
Two Park Ave., New York, NY 10016



COUNTLESS DESIGN COMBINATIONS

On panels, cabinet doors and drawers of all sizes ...quick, professional results every time with the **WING M-100 ROUTER TEMPLATE and the ARC DESIGN ATTACHMENT.**

BASIC TEMPLATE $139.00

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(602) 474-5836
(602) 474-3036

TIPS FROM YOUR SHOP (AND OURS)

Continued from page 11

No-skin varnish storage

If you allow a skin to form over varnish, paint, or other finish stored in partially used cans, you're throwing money and material down the drain.

TIP: Put a layer of kitchen-type plastic wrap on the surface of the liquid, pressing its edges against the sides of the can. You want to make sure that little or no air is trapped between the finish surface and the plastic wrap.

—Loyd Murphy, Oak Ridge, Tenn.

Safe way to sharpen a scraper

Skinned knuckles and sharp hand scrapers go together when you use a vise to hold the scraper for filing. One slip is all it takes.

TIP: Clamp a fine, single-cut bastard file horizontally in the vise as shown. While holding the scraper perpendicular to the file, draw it back with firm, even pressure. It only takes two or three strokes.

—Edwin C. Trefz, Norwood, Pa.

(You can also turn over the edges of a newly sharpened scraper by securing a burnisher in the vise.)

Continued on page 16

Are you getting squeezed out of your workshop?

Discover the space-saving advantages of the Shopsmith® MARK V. It "expands" the floor space of every shop it enters.

The MARK V combines the five major power tools — table saw, vertical drill press, horizontal boring machine, lathe and disc sander — in one economical, freestanding unit.

And the MARK V is the tool to start with... the system you grow with. Whether you're ready to tackle simple repairs or Chippendale classics, you'll find a full range of MARK V Accessories that can make any job easier.

The Shopsmith Difference
With Shopsmith you get a dedication to woodworking, education, expandability of your future needs, and buyer protection. Our philosophy is represented in the old-fashioned virtues of quality, value, pride and craftsmanship; virtues present in our educational training and products.

Your Special "Bonus"
Learn how the MARK V can help you do more projects more professionally. Send for your FREE MARK V Information Kit today! You'll see just how easy it is to make all those projects you've been dreaming about. Included in this kit is "How To Determine Your Best Power Tool Buy."

You'll also receive a FREE one-year subscription ($6.00 value) to HANDS ON, our Home Workshop Magazine packed with project ideas and helpful tips. You are under no obligation. So mail your card today!

Phone Toll Free: 1-800-228-2112
In Nebraska: 1-800-642-8788

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The Home Workshop Company
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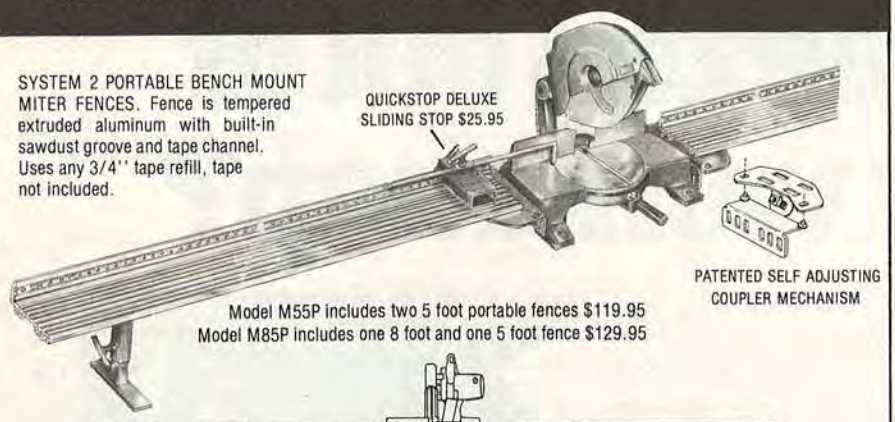
Knock down miter fences that set up with super accuracy in 60 seconds anywhere, then fold up for compact storage or transport. Also available in stationary models (System 1) and a larger version for radial arm saws or the Rockwell "Sawbuck".


SYSTEM 2 PORTABLE BENCH MOUNT MITER FENCES. Fence is tempered extruded aluminum with built-in sawdust groove and tape channel. Uses any 3/4" tape refill, tape not included.
QUICKSTOP DELUXE SLIDING STOP $25.95
PATENTED SELF ADJUSTING COUPLER MECHANISM

Model M55P includes two 5 foot portable fences $119.95
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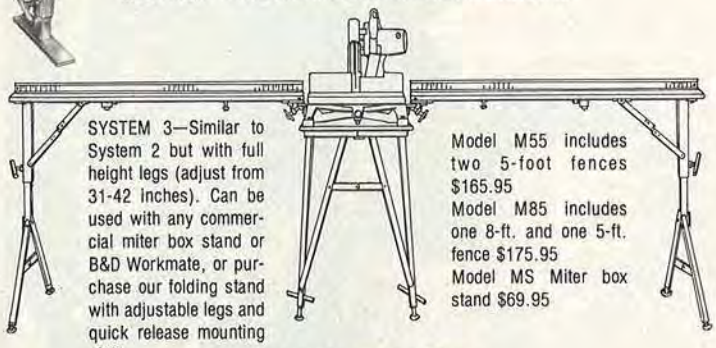

SYSTEM 3—Similar to System 2 but with full height legs (adjust from 31-42 inches). Can be used with any commercial miter box stand or B&D Workmate, or purchase our folding stand with adjustable legs and quick release mounting plate.

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Model MS Miter box stand $69.95

ORDERING INFORMATION

Sawhelper™ Miter fences and accessories are available at fine tool stores or by mail from: AMERICAN DESIGN & ENGINEERING INC., 648 Turin Ave., South St. Paul, MN 55075, Phone 612-455-4243 (24-hrs. answering service). Freight prepaid. MN and WI residents add sales tax. Check C.O.D., Master Charge or Visa. Order today!

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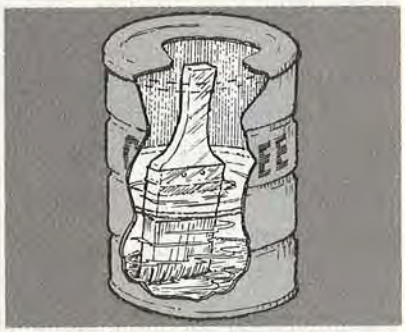
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 12

Putting contact cement and brushes "on hold"

Laminating large projects with contact cement often requires doing some work now and some later, with lots of mess and the loss of a dried-out brush in between.

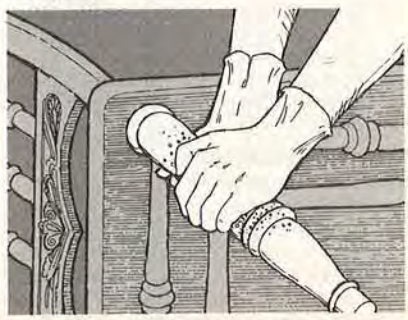
TIP: Use a coffee can with a plastic lid to hold and store both cement and brush. Pour the amount of cement you think you'll be using into the can to save on mess. Cut enough off your brush handle so it fits into the can. To quit for a while, put the brush in the can. Add lacquer thinner to cover bristles, then seal the container. Thinner keeps the brush and cement workable, but pour it off before laminating.
—Allan Kruger, New Port Richey, Fla.



Stripping irregular shapes

How do you get the old finish out of ornate carvings and details on furniture that you're stripping?

TIP: Wear rubber gloves and use a handful of sawdust or coarse wood chips as a scrubber to remove the stripper and old finish from difficult spots. The chips' scouring action take off the softened finish without damaging the wood.■



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by freud®

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WC-110

CM-100

CS-112

Freud is pleased to introduce an exciting new line of precision hand tools. Utilizing the finest materials available from choice boxwood to chrome vanadium steel, Freud hand tools will exceed all your expectations for precision woodworking instruments.

Our comprehensive selection of tools meets the needs of even the most demanding jobs with ease and durability. All tools provided with box jointed wood case as shown.

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Chisel Sets

WC-110 (shown above), Set Includes: 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1 1/4", 1 1/2". $66.90.
WC-106, Set Includes: 1/4", 3/8", 1/2", 5/8", 3/4", 1". $39.90.
WC-104, Set Includes: 1/4", 1/2", 3/4", 1". $29.90.

Carving Tools

CS-112 (shown above), Set Includes: 3/8" Straight Chisel —, 3/8" Skew Chisel —, 1/4" Flat Gouge —, 5/16" Gouge —, 3/16" Spoon Gouge ⌣, 1/2" Gouge ⌣, 1/4" Gouge ⌣, 3/16" Gouge ⌣, 3/8" Gouge ◡, 3/8" Gouge ◡, 1/8" Gouge, ⌄, 1/4" Parting Tool ⋁. $139.90.
CS-106, Set Includes: 3/8" Straight Chisel —, 1/2" Gouge ⌣, 1/4" Gouge ⌣, 3/8" Gouge ◡, 1/8" Gouge ⌄, 1/4" Parting Tool ⋁. $74.90.
CM-100, (shown above) Carver's Mallet: Oak Handle, Beechwood Head, Wt. 15 oz. $9.90.

Turning Tools

TT-108 (shown above), Set Includes: 1/2" Diamond Point, 1/2" Round Nose, 1/2" Parting Tool, 1/2" Skew, 1" Skew, 1/4" Gouge, 5/8" Gouge, 7/8" Gouge. $67.90.

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R 500	3hp Plunge Router	265	163
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B 7075	3x21 Sander	160	115
B 7100	3x24 Sander	198	144
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news and events

Photograph: Courtesy of Formica Corp.

Contemporary material, unique design talent, and skilled hands combine in an exciting furniture exhibit to tour the U.S.

Print this article

Highgirl (photo above) was created by Wendy Maruyama as a colorful takeoff on the traditional "highboy" chest of drawers. She and 18 other top woodworkers, including Wendell Castle, Edward Zucca, and Judy Kensley McKie, produced 23 innovative furniture pieces for "Material Evidence: New Color Techniques in Handmade Furniture," an exhibition that opens at the Renwick Gallery of the Smithsonian Institution, in Washington, D.C., on April 26. Cosponsored by the Formica Corporation and The Gallery at Workbench, a New York-based contemporary furniture retailer, contributing artisans were challenged to design and build furniture using Formica's new COLORCORE surfacing material. The bright, graphic furniture that evolved is on display at the Renwick until September 22, then it goes on a two-year tour to 12 major cities.

March 1–3

10th Annual Mid-Atlantic Wildfowl Festival

Location: Pavilion Convention Center, 1000 19th Street, Virginia Beach, Virginia. A carving event featuring decoys and other wildfowl, with demonstrations, seminars, equipment, and sales. *Hours:* 1–10 p.m. Friday; 10 a.m. to 10 p.m. Saturday; 10 a.m. to 5 p.m. Sunday. For information, write William M. Walsh, Jr., P.O. Box 805, Virginia Beach, VA 23451.

Woodworking World—The Washington, D.C. Show

Location: Hyatt Regency Crystal City, Arlington, Virginia
Admission: $5
Equipment, supplies, tools, and wood for all woodworking levels will be displayed and demonstrated. Seminars on technique are scheduled. *Hours:* 5–10 p.m. Friday; 10–6 p.m. Saturday; 10 a.m. to 5 p.m. Sunday. Contact Woodworking World, 35 Main St., Suite 6, Plymouth, NH 03264 for more information.

The Woodworking Show For Craftsmen & Hobbyists

Location: Pasadena Center, Pasadena, California
Admission: $5
Workshops from 45 minutes to 2½ hours in length, tool demonstrations, supplies, and equipment mark this well-attended show where the atmosphere is California casual. *Hours:* 12–9 p.m. Friday; 10 a.m. to 6 p.m. Saturday; 10 a.m. to 6 p.m. Sunday. For details, contact The Woodworking Show, 1516 South Pontius Ave., Los Angeles, CA 90025.

Continued on page 20

In 1984 I sold 624 workbenches like this for $449.95. Then the dollar got stronger.

NOW! only $249.95!

Mortimer V. Schwartz, President, The Fine Tool Shops, Inc.

It's made in Sweden. It's over 4 feet long. And you won't find a finer medium-size bench anywhere – not even at twice the price!

At $449.95 this was my best selling workbench. And no wonder. The 3-layer laminated wood top won't warp or shrink, and it's topped with fine red beech. There are 5 roomy drawers and a 2 cubic foot lockable storage compartment. The joints are dovetailed, it's finished with 5 coats of lacquer, and the pivoting nylon pad on the shoulder vise holds irregularly shaped pieces.

Running the length of the top is a series of holes which house bench "dogs" that you can push below the top for an unobstructed work surface, or raise as little as 1/4" to grip workpieces up to 50¼" long for full-length planing or sanding. For gripping extra large pieces, the slotted deadman leg next to the tail vise accommodates an optional clamp, which also fits in the hold down hole for benchtop gripping. A 5¾" wide tool trough runs the length of the bench. Overall width is 17⅛", with a 10⅜" wide working surface.

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33¼" high
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With pivoting nylon pad, grips regular or irregularly shaped pieces. Use as holddown on bench top, or with deadman leg.

Save 27% on my 6′ workbench.

My six foot Swedish workbench has a giant bottom storage compartment and laminated birch top with full length tool trough and a steel lined hole to accommodate a holdfast clamp. The joints are carefully fitted, there's a smooth lacquer finish, the shoulder vise rides on acme threaded steel rods and, like the four foot bench, it features the Swedish system of adjustable tail vise and dogs for gripping long workpieces. I've sold hundreds at $549.95. Maximum capacity with tail vise extended, 68½".

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The Fine Tool Shops, Inc. Dept. **WMM5**
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INCLUDE _____ (qty.) Holdfast Clamp(s) **400-0320** at $14.95 plus $1.50 shipping and handling (total $16.45).

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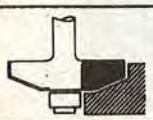
	#04	1/4" R	1/4"	1"	1/2"	15.00
	#05	3/8" R	3/8"	1¼"	5/8"	16.00
	#06	1/2" R	1/2"	1½"	3/4"	19.00
		ROMAN OGEE				
	#07	5/32" R	5/32"	1¼"	15/32"	18.00
	#08	1/4" R	1/4"	1½"	3/4"	20.00
	#11	3/8" RABBETING	Deep 3/8"	1¼"	1/2"	14.00
	#09	1/8" (KERF) SLOT CUTTER		1¼"	1/8"	14.00
	#10	1/4" (KERF) SLOT CUTTER		1¼"	1/4"	14.00
	#12	45° CHAMFER	45° Angle	1½"	5/8"	15.00
	#15	RAISED PANEL	20° Angle	1-5/8"	1/2"	25.00
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Continued from page 18

news and events

March 29–31

The Woodworking Show For Craftsmen & Hobbyists

Location: Dallas Market Hall, Dallas, Texas
Admission: $5
Same features as Pasadena show, previous. Use same address for information. *Hours:* 12–9 p.m. Friday; 10 a.m. to 6 p.m. Saturday; 10 a.m. to 6 p.m. Sunday.

April 12–14

Woodworking World—The New England Show

Location: Springfield Civic Center, Springfield, Massachusetts
Admission: $5
Identical in most ways to the Washington, D.C. show in early March, but with special emphasis on wooden boat building. *Hours:* 5–9 p.m. Friday; 10 a.m. to 6 p.m. Saturday; 10 a.m. to 5 p.m. Sunday. Write to address listed under Washington, D.C. show.

Mid-Atlantic Woodcarving Show and Competition

Location: Penn State Abington Campus Gym, Abington, Pennsylvania
Admission: $3
Sponsored by Pennsylvania/Delaware Valley Wood Carvers, this Saturday and Sunday show includes top carvers competing for awards, as well as exhibits, supplies, demonstrations, and tools. *Hours:* 10 a.m. to 5 p.m. Saturday and Sunday. Write Elmer Jumper, 142 DiMarco Dr., Philadelphia, PA 19154.

April 26–28

15th Annual World Championship Wildfowl Carving Competition

Location: Convention Hall, Ocean City, Maryland
Admission: $5; students, $2; children under 12, free
This largest of wildfowl carving events highlights works of top decorative carvers in many categories. Competition is stiff for nearly $50,000 in awards. *Hours:* 10 a.m. to 9 p.m. Friday and Saturday; 10 a.m. to 4 p.m. Sunday. For details, write Knute Bartrug, Chairman, 707 Eastern Shore Drive, Salisbury, MD 21801, or phone 301/749-5174.

Of Incidental Interest: March 16, Tage Frid demonstrates dovetail joinery at Woodcraft Supply's store, 313 Montvale Ave., Woburn, Massachusetts.

News of interest to woodworkers and dates of national and regional events must be received at least three months before our publication date to be considered for the News and Events section. Send information to: News and Events, Better Homes and Gardens® WOOD Magazine, Locust at 17th, Des Moines, IA 50336. ■

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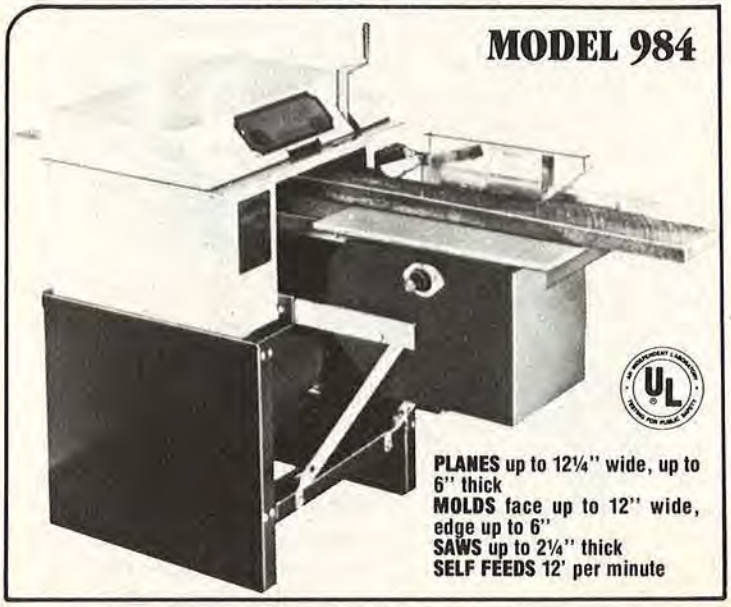

PLANES up to 12¼" wide, up to 6" thick
MOLDS face up to 12" wide, edge up to 6"
SAWS up to 2¼" thick
SELF FEEDS 12' per minute

MODEL 985

PLANES up to 12¼" wide, up to 6" thick
MOLDS face up to 12" wide, edge up to 6"
SELF FEEDS 12' per minute

Well over 50 years of manufacturing and engineering experience have resulted in the New Improved Model 984 and 985 Planers. The same integrity and quality that have made Foley-Belsaw the most sought after planer on the market are still built into every machine and combined with new improved features to put the 984 and 985 Planers a step ahead — THE ULTIMATE WOODWORKING POWER TOOL — IMPROVED.

This versatile power tool will make your home workshop pay off big plus save you both time and money. Never again do you have to depend on lumberyards for stock finished to proper dimensions for your project. The Foley-Belsaw Planer delivers true, smooth wood at the standard power feed rate of twelve feet per minute or at the optional twenty foot rate.

Foley-Belsaw planer operators are making and selling picture frames, fencing, furniture, bed slats and all kinds of millwork for contractors, lumberyards, paint shops, department stores . . . and direct to end-users.

Inexpensive rough sawn lumber converts to the required thickness high value finish stock right in your shop, where you need it, when you need it. The big capacity of the Foley-Belsaw Planer easily handles stock up to 12-3/8" wide and up to 6-1/4" thick. The built-in versatility of this machine also gives you the capability of ripping boards up to 2-1/8" thick and planing and molding them to finished dimension and pattern on the same pass. Unique design allows the saw blade to be placed at any point from side to side on the arbor shaft. Inexpensive molding bits can be used in the center of the planer cutterhead or on either end — while the planer knives still remain precisely installed in the cutterhead!

Crowns, casings, bases, tongue-and-groove, over two hundred custom knife patterns are available from stock. This vast choice of molding knives gives you the freedom and flexibility to produce the exact molding you need from any species of wood. Custom knives are ground from 1/4" high speed tool steel which allows molding to be cut with one knife, speeding installation and eliminating tedious alignments.

Special pattern knives can also be ground to allow you to match any existing patterns or make special moldings of your own design. Just send us a wood sample or drawing for a prompt quotation.

The Foley-Belsaw operates on either 3 HP or 5 HP Electric Motors. 3 HP is normally all that is required for the average home workshop while Foley-Belsaw recommends 5 HP for commercial or heavier duty, continuous applications.

The Only 12" Planer good enough to meet the rigorous standards of the Underwriters Laboratory.

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Print this article

BOOKS WORTH READING

Build It Together

By Katie and Gene Hamilton. Charles Scribner's Sons, 597 Fifth Avenue, New York, New York 10017. © 1983, 1984.

197 pages
$14.95
paperback

"A piece of wood, a hammer, and thou, my child" (with apologies to Omar Khayyám) might make an appropriate synopsis of this book, which shows that adults and children can have fun and gain satisfaction by making things together from wood. "All 27 projects in this book are designed for beginners, people with little or no experience in woodworking," the authors point out. "You don't need a fancy workshop and expensive power tools. Our projects can be built on a kitchen or Ping-Pong table. The materials are easy-to-find dimensional lumber available at home centers and lumberyards."

The projects include a hanging plant holder, tool boxes, a bat-and-ball rack, a bulletin board, a footstool, a model-building board, a bird feeder, a workbench, and an elevated play fort. Although these projects are simple, easy-to-build designs, they are functional, useful things that mostly require only a half-day to complete.

The authors provide a page or two of clearly written instructions for each project and include photographs and drawings showing crucial steps to keep readers on track. Noting that they tested each of these plans on parents and kids, they comment, "We hope kids and their parents or grandparents, teachers, or scout leaders find projects they want to build and then get right to it and enjoy the wonderful fun of building together."

"Not too long ago, the first project most apprentices completed was a box to hold their tools. Here are two easy-to-construct traditional tool boxes, one scaled for a master craftsman, the other just right for his apprentice. These matching tool boxes are constructed out of inexpensive but hardworking pine with hardboard bottoms."

"There is nothing more adorable than an almost-lifelike cuddly doll, but we noticed there's not much furniture built for them. Here is an easy-to-make slide just right for a doll 12"–20" tall. A dowel hinge makes the slide collapsible . . ."

Let's make this short . . . and very sweet!

MR. SAWDUST BLADE PRICES CAN NOW BE DROPPED 30%!

I *knew* it could happen.

Everybody knows we've never quoted a price in our ads. If we had, we'd have scared the life out of you . . . and the Mr. Sawdust Signature line would have died an early death.

You listened to our QUALITY story. You saw us prove our points in shows. You took us up on our *unlimited* guarantee. And you assured us that price was *not* the most important factor.

You moved our production from dozens to hundreds. And you made my blades the most desired among the serious woodworkers. You were good to us . . . and *for* us . . . and we can now be *good* to you.

For these good old American reasons, we are announcing permanent savings in our blade prices.* (And we don't have to take a full-page ad to do it!)

America's Foremost Power Tool Professional

**Dampeners and dado-heads not included in price-break.*

MR. SAWDUST I

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10" 60T.	$162.00	$113.40
9" 60T.	156.00	109.20
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MR. SAWDUST II

	WAS	NOW ONLY
10" 40T.	$156.00	$109.20
30T.	135.00	94.50
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BOOKS WORTH READING

Make a Windsor Chair with Michael Dunbar

By Michael Dunbar. The Taunton Press, Inc., 52 Church Hill Road, Box 355, Newtown, Connecticut 06470. © 1984.

165 pages
$13.95
paperback

The delicate elegance of the Windsor chairs pictured on the cover of this book at first glance seems achievable only by a master craftsman. But Michael Dunbar confesses in his introduction that 14 years ago he had "no experience working wood and, furthermore, had no interest in it whatsoever." His unexpected fascination with a small black chair encountered at a yard sale launched his career as a chair maker.

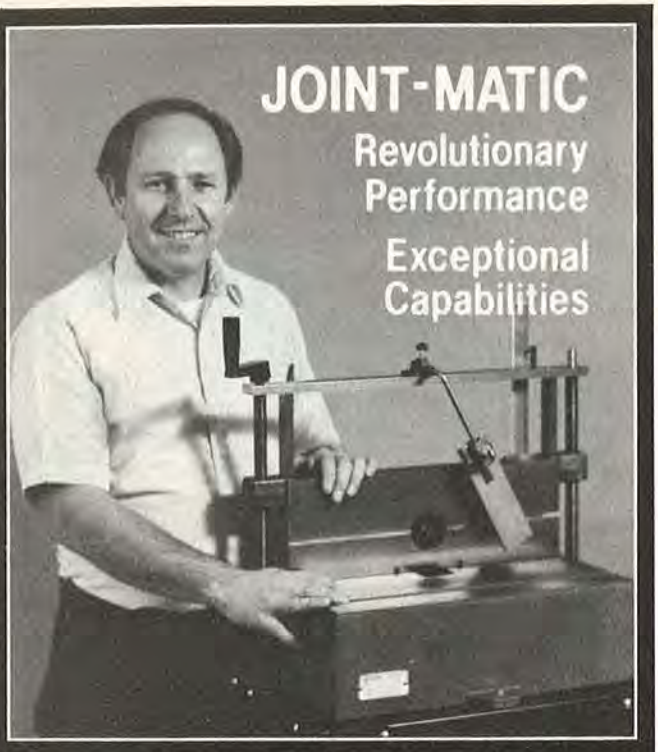
Acknowledging that he takes an unorthodox approach to working with wood, Dunbar seems to believe that anyone with enough interest can build one of these chairs. So he shows the reader how.

Chapters cover such topics as sculpting the seat, making Windsor-chair joints, turning the legs, socketing the seat, turning the stretchers, assembling the undercarriage, bending the backs, whittling the spindles, assembling the backs, finishing, and even sharpening chair-making tools. The book also boasts plans for the sack-back and continuous-arm-style chairs featured in the text, plus a gallery of Windsor chair designs. Except for a lathe needed for turnings, Dunbar employs hand tools for most tasks.

The book is illustrated with 349 photographs and 27 drawings. **Caution:** Dunbar's clear, enthusiastic writing style is persuasive enough to tempt most woodworkers to build a Windsor chair.

"Green wood is a joy to turn. Once you have tried it, you will regret any time you have spent in combat with dry, hardwood turning squares. After the green-wood blank is completely round, the chips come off in unbroken lengths like ticker tape . . ."

"The comment is often made that Windsors were only painted to cover the fact that so many different woods were used in the chair. On the contrary, I think the craftsman who developed the Windsor forms had a painted surface in mind from the beginning—to a great extent, paint dictated what Windsors would look like."



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Photograph: Jim Elder

Antique woodworking tools, like these planes from the collection of member Vern Ward, reflect only one aspect of the Early American Industries Association's broad interests.

THE EARLY AMERICAN INDUSTRIES ASSOCIATION

Woodworkers are a vast fraternity, willing to share knowledge, skills, and experience. And many of the craft's specialties are channeled into associations where members focus their common interests.

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"Who owned it?"

"What does it, or did it, do?"

"When and where was it made?"

Questions like these form the mystique shrouding the tools, obsolete trades, and industries of long ago that have been the focus of the Early American Industries Association (EAIA) for over 50 years.

More than 24,000 members from 53 states and 12 countries join together under the EAIA charter "to encourage the study and better understanding of early American industries in the home, in the shop, on the farm, and on the sea; also, to discover, identify, classify, preserve, and exhibit obsolete tools, implements, and mechanical devices which were used in early America."

Membership in EAIA is open to any individual or institution sharing this interest and purpose, and includes collectors, curators, conservators, researchers, writers, teachers, and institutions such as libraries, museums, and restoration groups.

You'd expect a diverse group to have varied interests. Try picking an area to explore from these identifiable EAIA specialties: farm implements and dairy equipment; woodworking, metalworking, and leather-

ASSOCIATIONS

working tools; textile machines; lighting devices; domestic utensils; hunting, fishing, trapping, or nautical equipment; medical and dental equipment; scientific instruments; weighing and measuring devices; industrial equipment; and vehicles.

At EAIA semiannual meetings, held each spring and fall, members have the chance to exhibit and view collections, add to them at tool sales and exchanges, and learn of bygone techniques and domestic industries through demonstrations, exhibits, and seminars. Bath, Maine, will host the 1985 spring meeting, scheduled for May 30 to June 2.

Researching the old ways, and sharing that research through publications, has been a primary activity of the EAIA. In *The Chronicle*, the association's quarterly magazine, members describe past technology, current collecting, preservation techniques, and other related subjects. *Shavings*, the periodic newsletter, reports on meetings and activities.

Films and books for research and study are available through the EAIA library located in the Spruance Library of the Mercer Museum in Doylestown, Pennsylvania. Discounts on books published by the association, affiliated organizations, and trade and university presses, are available.

Organizations with ties to the EAIA include EAIA West, Mid-West Tool Collectors Association, South West Tool Collectors Association, and the Three Rivers Tool Collectors Association.

Individual membership is $15 per calendar year, and includes the publications plus an annual membership directory.

For more information and membership application, write: John S. Watson, Early American Industries Association, P.O. Box 2128, Empire State Plaza Station, Albany, NY 12220. ■

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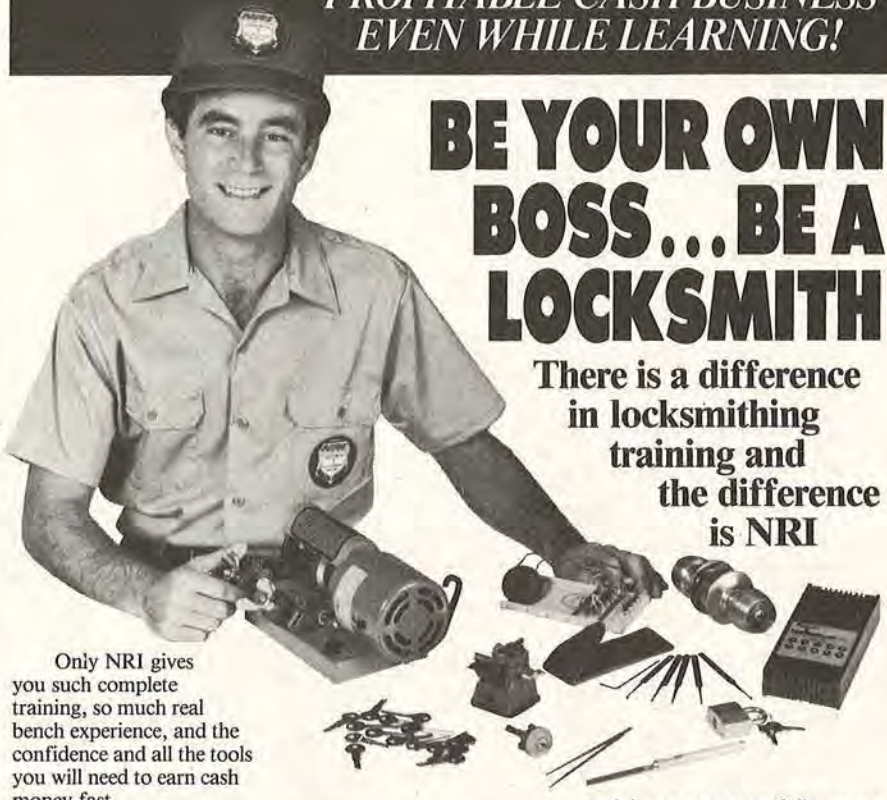

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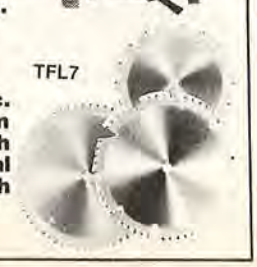


Paul L. McClure

Wood technologist; lecturer; owner of Wood World, a retail hardwood store in Tempe, Arizona; woodworking instructor, and former exotic hardwood buyer.

CHERRY
the popular choice for bronchitis, bounce, and breakfronts

Once only an imitator, cherry has earned its place among woodworkers' fine hardwoods. And who hasn't tried a wild cherry coughdrop?

Brief History

Black cherry (*Prunus serotina*) was abundant when the first settlers came ashore in the New World. And, fortunately, the wide distribution of the seeds of its fruit by birds have always assured us of a supply.

Colonial furniture makers called cherry "New England Mahogany" because of its tendency to turn dark red-brown after exposure to sunlight, and used it side by side with the real thing.

Black cherry has a variety of nicknames—choke cherry, rum cherry, whiskey cherry, and wild cherry—all due to the use of its small, bitter, dark purple fruit as a flavoring in jellies and drinks such as the potent "cherry bounce." Extractions from its bark have long been an ingredient in medicines for bronchitis and coughs.

Wood Identification

Of the many cherry species found in Europe, Asia, and the United States, only black cherry is commercially important.

Cherry wood has a straight, satiny grain, often with a ripple figure. Heavy and hard, stiff and strong, the wood resists knocks, and other abuse.

When first cut, cherry looks a pale, pinkish brown, but it gradually darkens to a mahogany-like red. Often, the very light-colored sapwood, as well as resin or gum pockets, will be present in boards. FAS (firsts and seconds) grading standards accept their presence, but woodworkers shouldn't.

Cherry veneers, normally plain-sliced, feature straight-grain, though you'll occasionally find gummy (with resin pockets) and a mild ripple figure available.

Straight grain

Resin-spot grain

Ripple grain

Black Cherry

Working Properties

While cherry shrinks considerably in the drying process, contraction and expansion are moderate after seasoning.

Cherry works well with all hand and machine tools, although it will burn if cutting edges aren't extremely sharp. Carvers and wood turners find that cherry adapts well to the knife and lathe, too. It takes a radiant finish, and its rich, natural color most often goes unstained.

Uses in Woodworking

Since cherry withstands shock, compaction, and abuse, furniture-makers as a general rule love working with it. Choice cherry logs find their way into veneers for architectural paneling and into hardwood plywood for cabinets. And solid stock becomes fine furniture, musical instruments, carvings, and turnings.

Cost and Availability

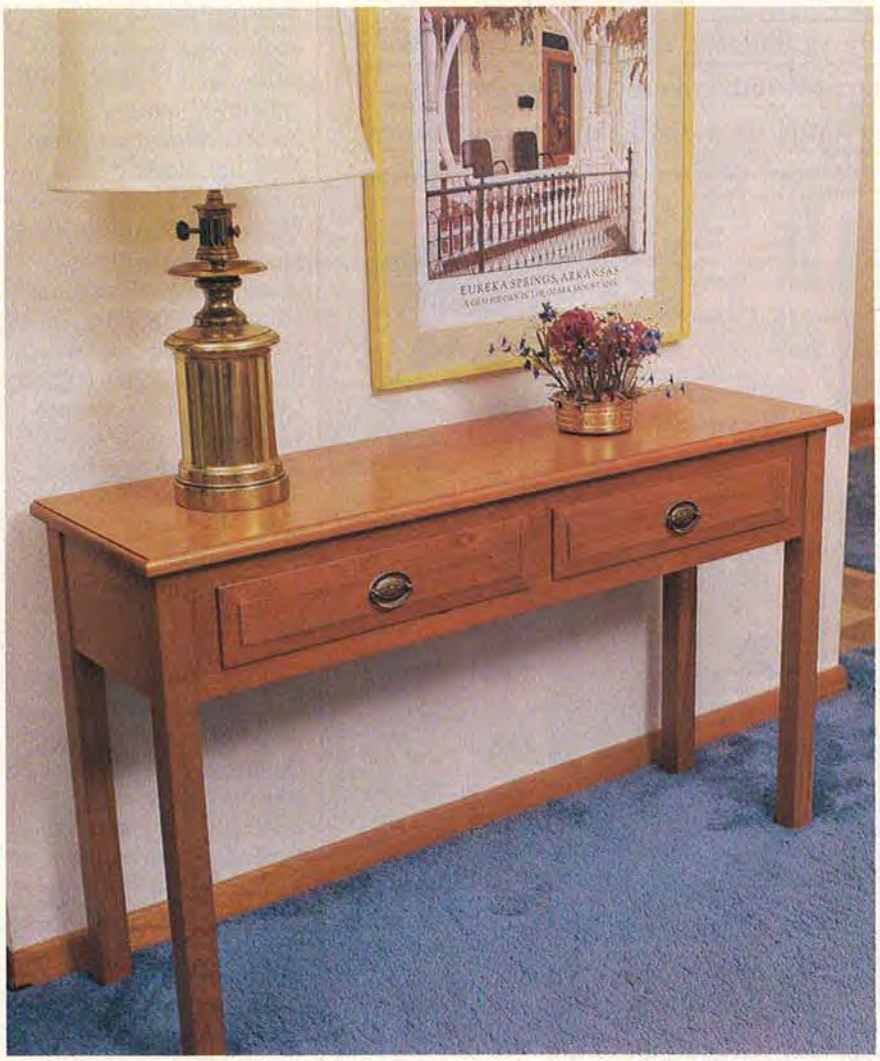
Cherry-veneered hardwood plywood remains expensive, but the cost of cherry lumber approximates that of oak, depending on how far you live from the supply.

Boards normally run to about 10″ wide, since cherry is a comparatively small tree. And lengths usually don't exceed 12′.

Sources of Supply

Black cherry grows from the Dakotas south to Texas, east to northern Florida, and north to Nova Scotia. The Appalachian mountain region of Pennsylvania and West Virginia have the largest stands. ■

TRADITIONAL-STYLE HALL TABLE



Photograph: Al Elder Design: Dave Ashe

Simply stated lines and quality cherry lumber combine to make this furniture piece a pleasure to build and to own.

Print this article

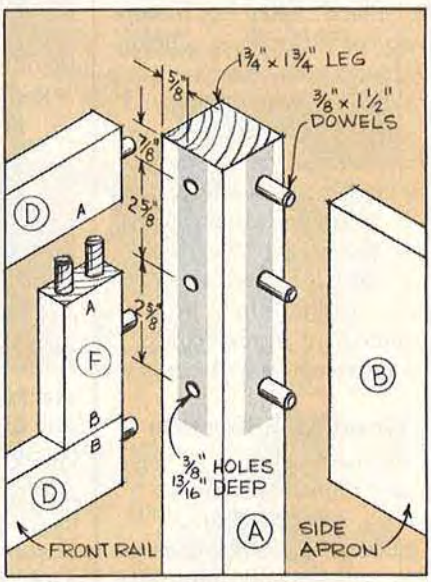
Constructing the Table's Base

1 Rip, then crosscut the 1¾"-thick cherry stock to size for the table legs (A). (If you can't find stock this thick, laminate thinner cherry pieces, then rip and crosscut to size.)

2 Rip the side aprons (B) and the back apron (C) to width and crosscut them to length. Now, cut the rails (D) and stiles (E, F) to size for the front frame.

Clamp the frame members (D, E, F) together and mark a pair of dowel holes at each joint. (Mark the joints A-A, B-B, and so on, as shown in the Leg/Rail Doweling Diagram, so you won't have a problem getting the mating members back together again.) Remove the clamps, then drill ⅜" dowel holes 1³⁄₁₆" deep in pieces D, E, and F. Glue and clamp the front frame (D, E, F) together. Remove glue squeeze-out when the glue forms a tough skin. After the glue dries, sand the assembly smooth.

3 Now, clamp the front frame and the side and back aprons (B, C) to the legs. Make marks for dowel holes at each joint. (See the Leg/Rail Doweling Diagram for correct positioning.) Drill the dowel



holes, then glue and clamp the pieces together. Check for square with a framing square. Set the frame upright and check to see that the table stands flat. If it doesn't,

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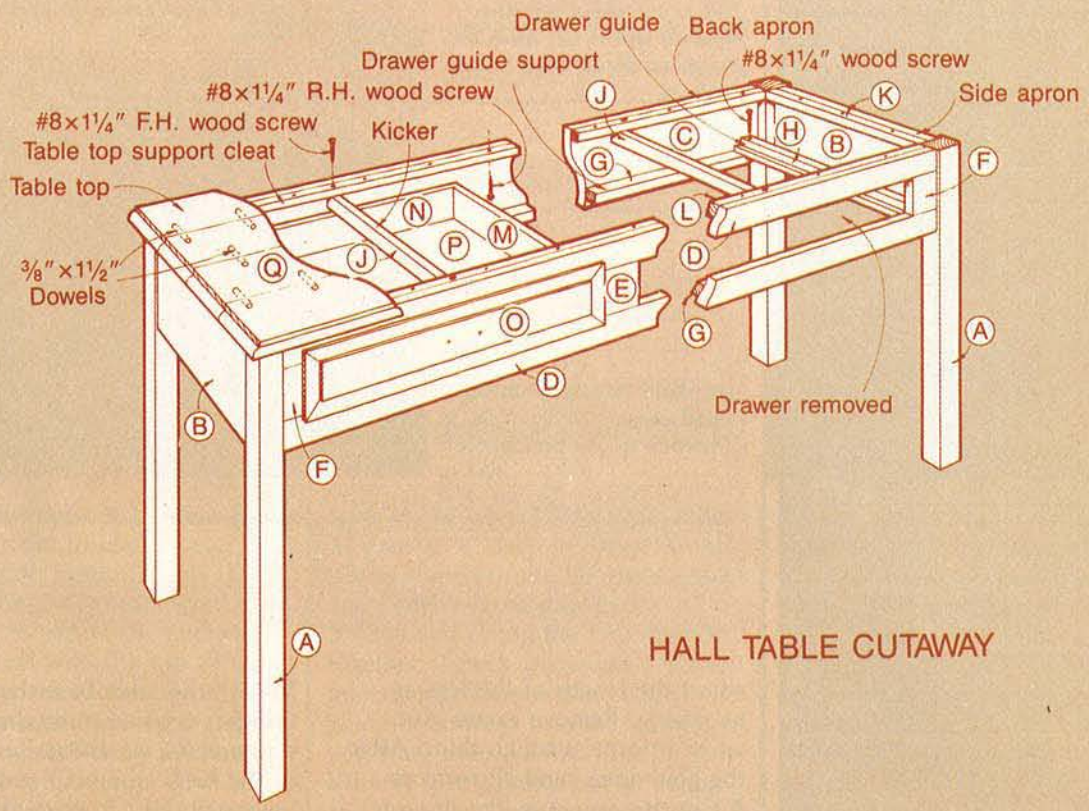
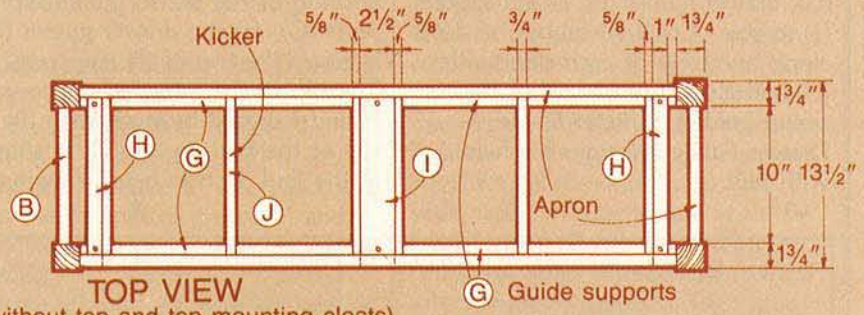
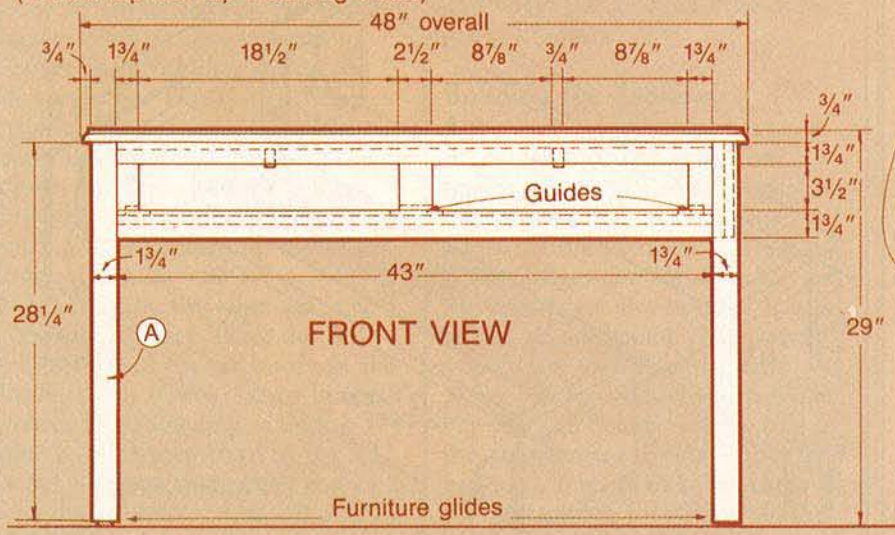


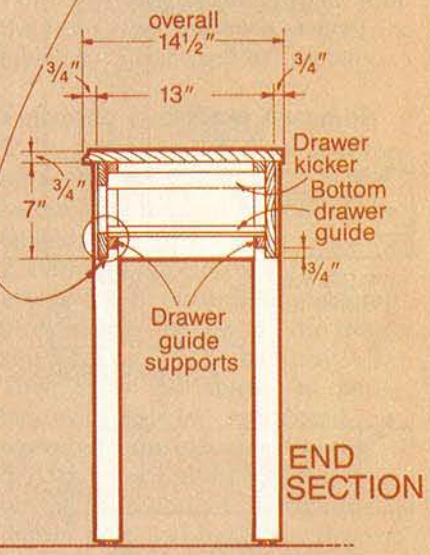
HALL TABLE CUTAWAY



TOP VIEW
(without top and top mounting cleats)



FRONT VIEW



END SECTION

Continued

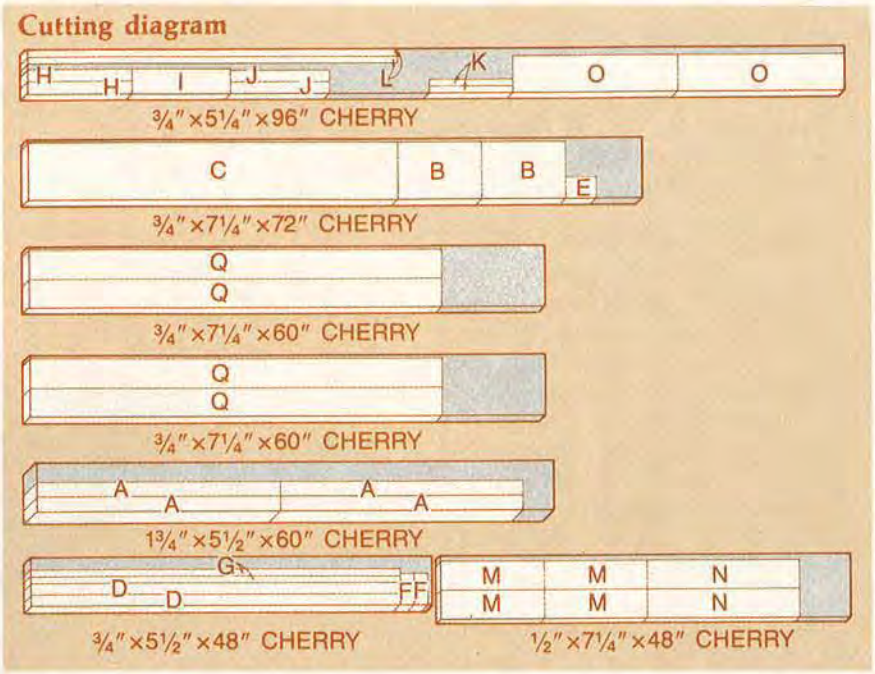
Bill of Materials

Part	Finished Size* T	W	L	Material	Qty.
A	1¾"	1¾"	28¼"	cherry	4
B	¾"	7"	10"	cherry	2
C	¾"	7"	43"	cherry	1
D	¾"	1¾"	43"	cherry	2
E	¾"	2½"	3½"	cherry	1
F	¾"	1¾"	3½"	cherry	2
G	¾"	¾"	43"	cherry	2
H	¾"	1⅝"	11½"	cherry	2
I	¾"	3¾"	11½"	cherry	1
J	¾"	1 13/16"	11½"	cherry	2
K	¾"	¾"	10"	cherry	2
L	¾"	¾"	43"	cherry	2
M	½"	3¼"	12"	cherry	4
N	½"	3¼"	17⅞"	cherry	2
O	¾"	4¼"	19⅜"	cherry	2
P	¼"	11½"	17⅞"	cherry ply.	2
Q*	¾"	3⅝"	48"	cherry	4

*Some parts are cut larger initially, then trimmed to finished size. Please read instructions before cutting.

Supplies: 2—drawer pulls, #8×1¼" roundhead wood screws, ⅜"×1½" dowels, #8×1¼" flathead wood screws, 4—furniture glides

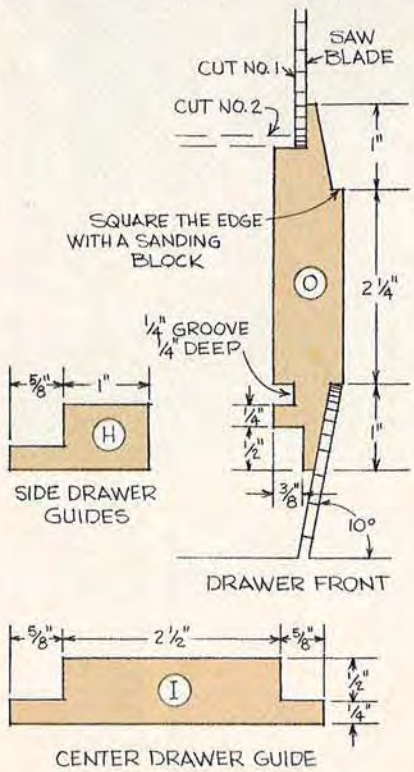
Cutting diagram

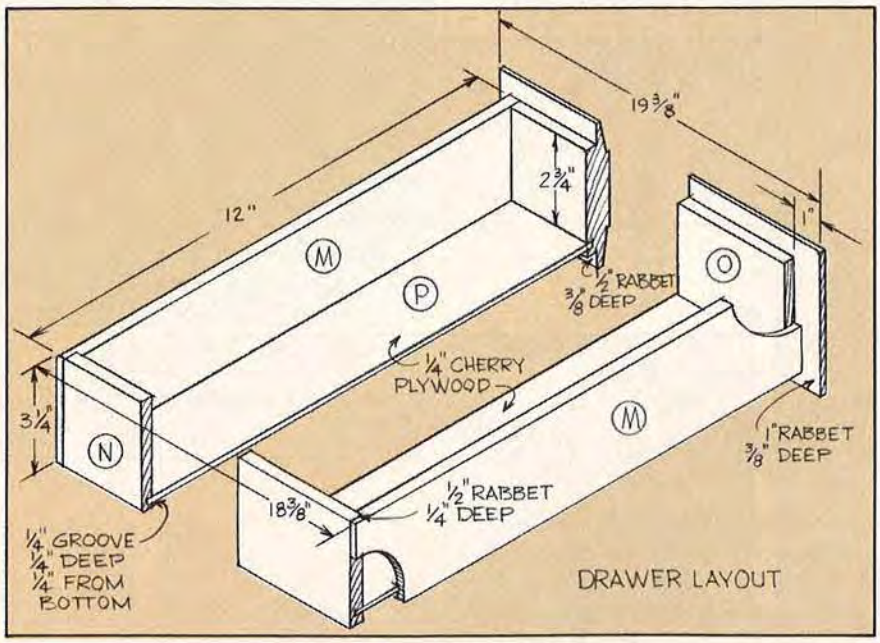


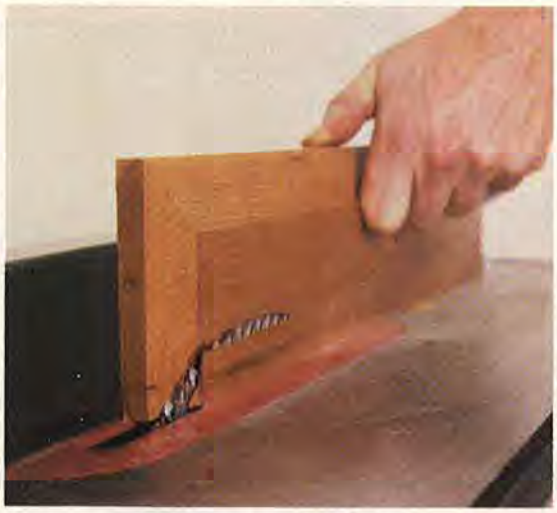
adjust the length of the legs as necessary. Remove excess glue when it forms a tough skin. After the glue dries, sand all surfaces.

4 Cut the drawer guide supports (G), drawer guides (H, I) and kickers (J) to size. Cut a ⅝" rabbet ½" deep along one edge of each side guide (H) and along both edges of the center guide (I). Refer to the Drawer Guide drawings for help with this.

5 With the table base standing upright, dry-clamp the drawer guide supports (G) ¾" above the bottom of the back apron (C) and the front lower rail (D). To check for correct position of the drawer guide supports (G), set the drawer guides (H, I) across the top of the supports. The top of the rabbeted portions of H and I should be flush with the top of the bottom rail (D) as shown in the End Section detail drawing.







Cut the drawer front ends with the blade set at 10°, and push the fronts through with a push block as shown at right.

With the tablesaw blade set at 10°, cut the drawer front bottom and top as shown at left.

Mark the positions of G, then glue and clamp them in place.

6 Cut tabletop support cleats (K, L) to size. Glue and screw them to the base as shown in the cutaway drawing, flush with the top of the base. Center the kickers (J) in the drawer openings, then screw them to the top-support cleats as shown in the cutaway drawing. Drill 5/32" pilot holes through K and L for later mounting of the tabletop.

Making and Fitting the Drawers

1 Start by ripping, then crosscutting the drawer sides (M), backs (N), fronts (O), and bottoms (P) to size.

2 Cut a ¼" groove ¼" deep and ¼" from the bottom of pieces M and N as shown in the Drawer Layout drawing.

3 Using a table saw with the blade set at 10° from vertical, cut the drawer fronts as shown in the Drawer Front drawing and in the photos above. (We test-cut scrap material first to check the bevel angle and the depth of the cut. Use a push block to push the fronts through when cutting the ends. You'll want to square up the edges after making the cuts.)

4 Again, using the table saw, cut a ½" rabbet ⅜" deep along the top and bottom of the back side of the drawer fronts (O) as shown in the Drawer Front drawing. Use the same two-cut procedure to cut a 1" rabbet ⅜" deep along each end of each drawer front. Also cut a ½" rabbet ¼" deep along one end of each of the drawer sides (M), and a ¼" groove ¼" deep in drawer fronts (O) as shown in the Drawer Layout and Drawer Front drawings.

5 Glue and clamp the two drawers together. Check for square. "Rack" into square, if necessary. (Don't glue the bottoms into the grooves; you want them to float free.) Remove glue squeeze-out as before and sand the drawers smooth after the glue dries.

6 To fit the drawers to the opening, set the drawer guides (H, I) on the drawer guide supports (G). Set the drawers on the guides and mark the location of the guides. (The guides should hold the drawers so they slide easily and are square with the front frame.) Remove the drawers, drill pilot holes through the guides into the guide supports, then glue and screw the guides to the drawer-guide supports.

Building the Tabletop

1 Rip and crosscut the pieces for the tabletop (Q). (We cut our boards 1" longer and ¼" wider than the finished dimensions. This allows a little extra for jointing the boards' edges and for squaring up the ends later. If you don't have a jointer or don't joint your boards, you'll want to cut the tabletop pieces (Q) to finished width initially.) Lay the boards side by side in the arrangement in which they will be glued, then draw a large triangle on the tabletop for ease in realignment during clamping.

2 Mark the location of the dowels along the joint lines (we staggered them as shown in the cutaway drawing, and spaced them from 8" to 12" apart). Now, drill ⅜" holes 13/16" deep in the tabletop pieces (Q). Glue, dowel, and clamp the tabletop together. Alternate the clamps on the top and bottom of the boards, and space the clamps about 6" apart across the length of the top. (We placed waxed paper between the pipe clamps and cherry boards to prevent the clamps from staining the wood where the glue comes in contact with the pipe.)

3 After the glue has dried, remove the clamps and use a scraper to remove the excess. Sand both tabletop surfaces smooth. Trim the ends to the finished 48" length. With a beading bit and router, rout the front edge and both ends of the tabletop. Finish-sand the tabletop.

Finishing and Final Assembly

1 Finish the base, drawers, and top separately (be sure to apply finish to both the top and bottom of the tabletop).

2 With the tabletop and base upside down, position the tabletop (it overhangs the legs on the front and sides by ¾"; the back, by ¼"). Then, fasten the tabletop to the base with #8 × 1¼" roundhead screws (see the cutaway drawing).

3 Attach the furniture glides, then set the table upright. Attach the drawer pulls and install the drawers in the base. ■

Our low-cost, last-for-a-lifetime ROUTER TABLE

Photograph: William Hopkins Associates

Print this article

The perfect companion to your shop's most versatile tool, this go-anywhere, bench-top router table helps make even tough routing jobs easy. And its built-in vacuum attachment keeps dust and chips to a minimum.

Constructing the Base

1 Rip the feet (A), legs (B, C), and support frame pieces (D, E) to width, then crosscut them to length.

2 Glue and clamp the legs (B, C) in a T-shape, with C centered on and flush with the ends of B.

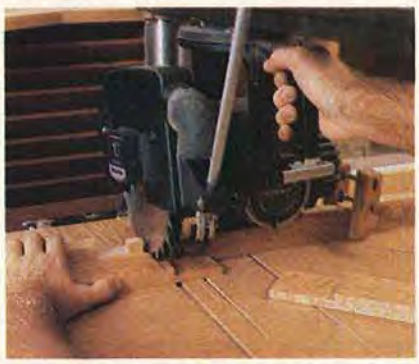
3 Cut half-lap joints at each end of the support frame pieces (D, E) as shown in the photo at right. (We did the work with a radial arm saw fitted with a dado set. We set the depth at one-half the thickness of the material, clamped a length stop 3" from the blade, made test-cuts with scrap, then made the cuts. It took several passes.)

4 Sand the support frame pieces smooth, then glue and clamp them together, checking for square.

5 Clamp the legs between the feet and the support frame (refer to the Router Table drawing for the correct position). Drill 3/32" pilot holes through A and E and on into the legs. Enlarge the top 1/2" of the pilot holes by drilling with a 3/16" bit to house the shank of the screw. Remove the clamps, glue the mating surfaces, then countersink and install #10×2" wood screws.

Building the Top

1 Cut the tabletop (F) to size. Now, apply plastic laminate to the top surface and balance sheet to the bottom side (the latter stabilizes the tabletop and reduces the chances of warpage).



Note: We used a sink cutout for our tabletop. Often, you can purchase these very inexpensively at home centers and lumberyards.

2 Find and mark the center point of the tabletop as shown in the Router Table drawing. Drill a 1/8" pilot hole from the top side through the center point.

3 Place the tabletop facedown, then remove the plastic subbase from your router and install a V-grooving bit. To center the router over the 1/8" pilot hole, set the bit into the hole and trace the outside perimeter of the router's base.

4 Replace the V-grooving bit with a straight bit and, using the outline of the router base as a guide, rout out a recess 3/8" deep into the bottom side of the tabletop.

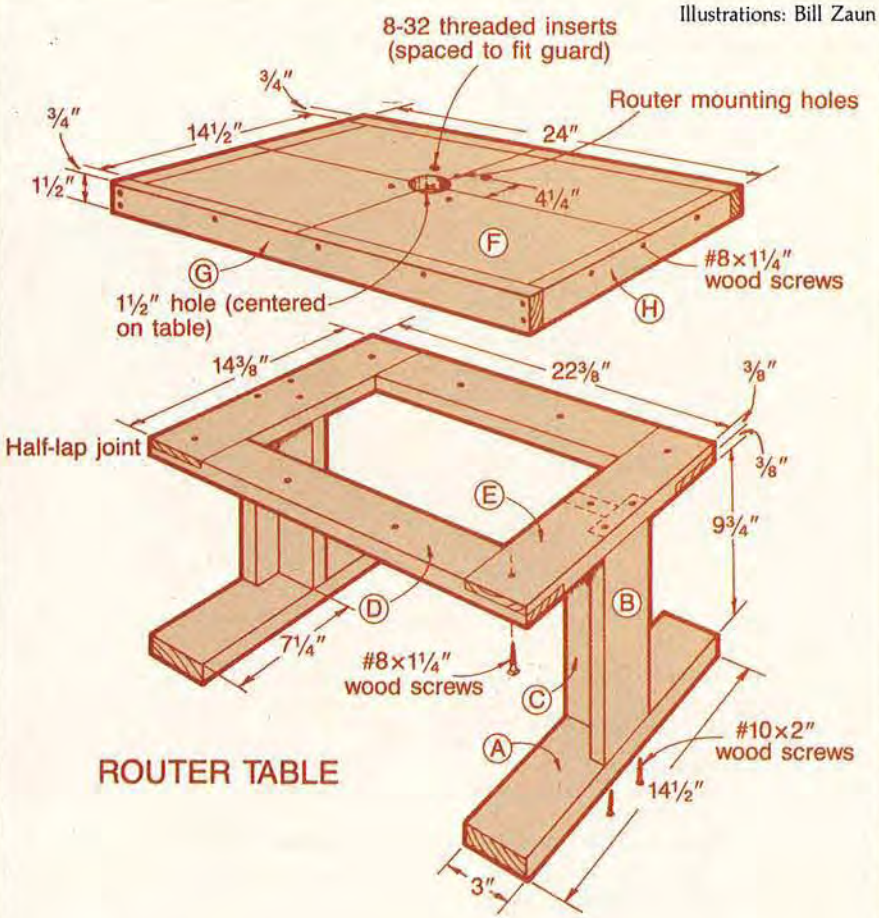
Bill of Materials

Part	Finished Size*			Material	Qty.
	T	W	L		
A	¾"	3"	14½"	maple	2
B	¾"	3"	9¾"	maple	2
C	¾"	2¼"	9¾"	maple	2
D	¾"	3"	22⅜"	maple	2
E	¾"	3"	14⅜"	maple	2
F	¾"	14½"	22½"	plywood	1
G	¾"	1½"	24"	walnut	2
H	¾"	1½"	14½"	walnut	2
I	¾"	2"	24"	maple	1
J	¾"	3¾"	24"	maple	1
K	¾"	3½"	3¾"	maple	1
L*	1¼"	3½"	5"	maple (lam.)	1

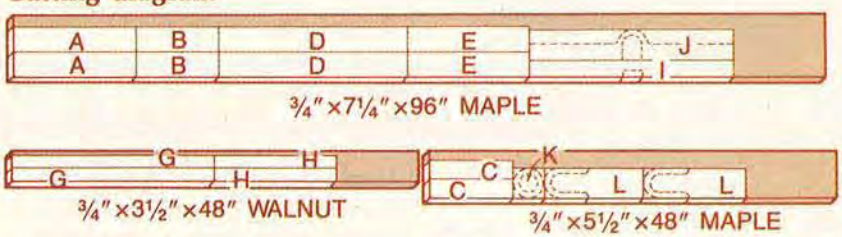
*Some parts are cut larger initially, then trimmed to finished size. Please read instructions before cutting.

Supplies: 12—#10×2" flathead wood screws, 28—#8×1¼" brass flathead wood screws, 6—#8×¾" brass roundhead wood screws, 1—8-24×½" brass roundhead machine screw, 1—#8×1" brass roundhead wood screw, 2—8-32×2¼" brass roundhead machine screws, 2—8-32 threaded inserts, screws to mount router to router tabletop, 2—brass coat hooks and mounting screws, ¼" acrylic sheeting, plastic laminate, balance sheet, contact cement, 2—vacuum hose adapters, polyurethane.

Illustrations: Bill Zaun



Cutting diagram



5 Now, working from the top side, drill a 1½" hole through the top, using the ⅛" pilot hole as the center point. (We used a 1½" paddle bit to drill the hole and placed a piece of wood on the bottom side to prevent breakout.)

6 To mount the router to the bottom side of the tabletop, place the router into the router recess, then locate, mark, and drill the router mounting holes (the ones used to attach the plastic subbase). Countersink the mounting holes from the top side so that the machine screw heads will be slightly below the top surface. (The location and size of the machine screws will vary depending on your particular router.)

7 Rip and crosscut the walnut banding pieces (G, H) to size. Screw them to the tabletop, using #8×1¼" screws. Attach the tabletop to the maple base.

Building the Fence

Note: Both the fence and the guard were designed to accommodate a 2¼" vacuum-hose adapter. Dimensions may have to be adjusted to fit your vacuum. The fence works well when routing straight pieces such as decorative molding. The guard, designed for use with router bits that have pilots, performs best when routing the edge of an irregularly shaped object.

1 Rip and crosscut the upright (I), base (J), and filler block (K) to the size indicated in the Bill of Materials.

2 Set the vacuum-hose adapter against the back edge of the filler block, trace both the inside and outside circumferences, and mark the screw hole locations. Cut the filler block to its finished shape, and either drill or cut out the 2¼" hole you just marked.

3 To shape the base and upright, measure over 12" from one end of both to find their center. Then, lower the filler block down onto the base (see the shaded area in the

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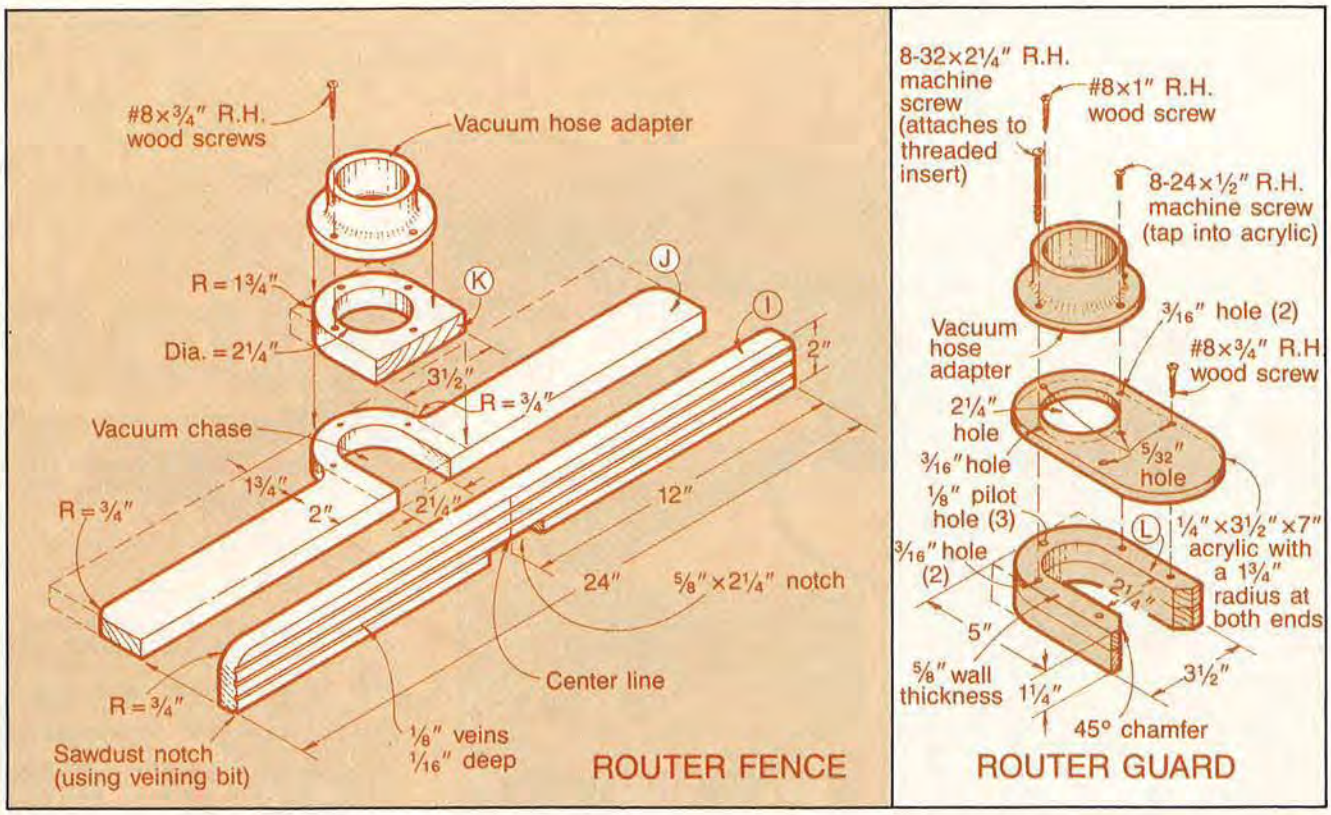


Router Fence drawing for correct positioning). Trace the outline of the filler block as well as the circumference of the hole onto the base.

Remove the filler block and extend a line from either edge of the circle to the front edge of the base to form the sides of the vacuum chase. Now, draw a line the length of the base, 2" from its front edge. Using this line as a reference mark, scribe the ¾" radii on the base. Mark the radii at each end of the upright and the notch at the bottom of the upright, and cut both parts to their final shape.

4 Clamp a board, for use as a temporary fence, to your new router table and cut the veins in the upright. (They help relieve surface adhesion when routing along the fence.) Also, cut a notch at the bottom of the upright to prevent sawdust buildup.

5 Sand all three fence parts smooth, then glue and clamp the parts together. After the glue dries, drill ⅛" pilot holes and screw the hose adapter to the filler block.

Making the Guard

1 Glue and clamp two ¾"×4"×12" maple boards together to form the guard (L) (we cut them extra long for safety in resawing). Allow the glue to dry.

2 Resaw the laminated block to 1¼" thickness. Then, rip it to 3½" and crosscut it to 5".

3 Cut a piece of acrylic sheeting to 3½"×7". Again, using the vacuum hose adapter as a template, scribe the inside and outside circumferences and the screw holes on the surface, at one end of the acrylic. Move the adapter to the other end and mark the outside circumference. Cut the acrylic to its final shape, and using a circle cutter, cut a 2¼" hole through it. Sand the cut edges smooth.

4 To fashion the guard, lower the acrylic onto the laminated block and follow the same procedures you used to shape the fence base. (See Building the Fence, step 3.) After cutting the horseshoe-shaped guard to its final configuration, chamfer its ends as shown in the Router Guard drawing. Sand the guard smooth.

5 Clamp the acrylic to the guard block, and position the hose adapter on the acrylic. Then, mark and drill four 5/32" holes in the acrylic and ⅛" pilot holes in the block where indicated in the Router Guard drawing. Also, drill two 3/16" holes through the acrylic and the block for the 8-32×2¼" machine screws that will hold the guard to the router table. Screw the hose adapter to the guard.

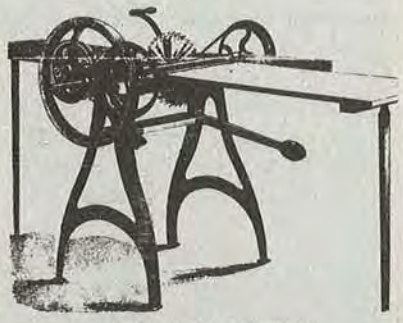
6 Clamp the guard to the router table. Make sure to have the 3/16" machine screw holes 4¼" back from the line used to center the 1½" hole in the router top (see the Router Table drawing). Drill through the 3/16" holes in the guard into the tabletop to locate the center of the holes for the threaded inserts. Enlarge the two 3/16" holes to ¼" and install the inserts.

Finishing the Project

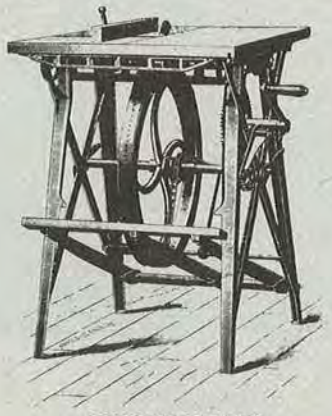
1 Finish-sand all wood pieces, then coat with polyurethane.

2 Screw the coat hooks to the legs (these allow you to wrap up the router cord when not in use). ■

OLD-NEWFANGLED woodworking machinery



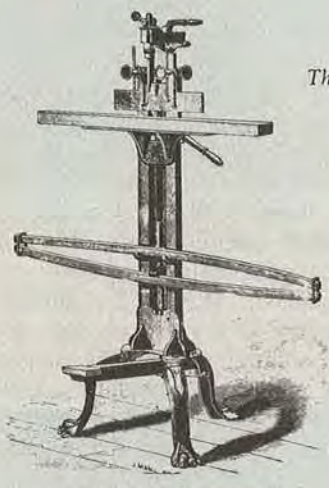
HAND CIRCULAR RIP SAW



COMBINED MACHINE

NO. 3 LATHE

The W.F. & John Barnes full line of professional woodworking machines as depicted in an 1882 advertising poster.

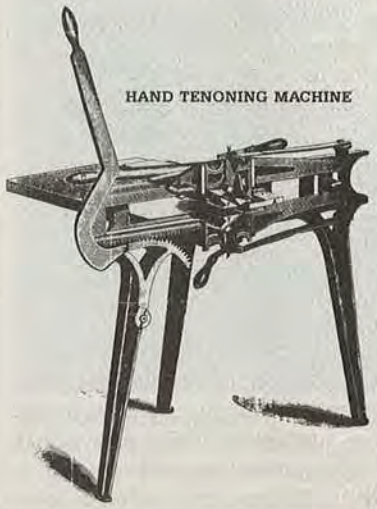


IMPROVED FOOT-POWERED MORTISING MACHINE

NO. 7 SCROLL SAW

Fluting Attachment for Former.

FORMER



HAND TENONING MACHINE

Poster reprint courtesy of Roger K. Smith

"Do not mistake these machines for the foot-power machines used by amateurs and boys for pastime and amusement. These machines are for profitable use in the workshop."

—W.F. & John Barnes Company, 1882

Imagine yourself for a moment as the owner of a small cabinet shop in the late 1800s. You're in the middle of the Industrial Revolution. America has discovered steam. It powers boats, ships, carriages, and machines—even woodworking machines. You still rely upon muscle and hand tools, though, and you can't afford steam power. As a result, you're losing bids and money. What do you do?

Like thousands of others who made their livelihood from wood—contractors, builders, cabinetmakers, and craftsmen—you would probably read the advertisements of the W.F. & John Barnes Company of Rockford, Illinois, and find a way to compete. Their full line of newfangled foot- and hand-powered woodworking machinery, designed to offset steam's competitive edge, were

Continued

Print this article

the answer. And the machines were "affordable."

From the 1870s to the early 1920s the Barnes Company designed, manufactured, promoted, and sold their equipment to woodworkers across the nation.

Woodworkers such as A.R. Young, from Green Springs, Ohio, testified their satisfaction with the equipment in Barnes' advertisements: "Your machine does just as good work as can be done on any steam power machine. The machine is strong, the adjustments simple and the best I ever saw on any machine. No man can afford to do without it. The advantage of your machine is, it is always ready without raising steam."

Saving time and money through foot power

Patented from 1874 to 1878, the Barnes line did away with problems of direct power transfer encountered by previous manufacturers by "entirely overcoming dead centers, reducing friction to a minimum, and in other ways getting rid of the shortcomings of the old powers."

To support this claim, an 1882 advertising poster carries a comment by F.G. Mills, New Grenada, Pennsylvania, Furniture Rooms: "Your machines are turning out to my entire satisfaction. I would say that your machines are perfection."

As part of their marketing program, the Barnes Company offered their machines "on trial." A $5 deposit with an order sent any machine out. Yet the cost to completely outfit a shop with their seven professional machines—the No. 7 Scroll Saw, the Former, the Mortising Machine, the Tenoning Machine, the Rip Saw, the Combined Machine and the Lathe—cost less than $250.

For those who could not "spare ready money for the purchase complete of our machines at one order" Barnes suggested, "there are very few who cannot purchase one or more at a time, until he has obtained the complete outfit."

Some Barnes' machines, like this lathe, used a perforated leather belt to transfer power from the foot pedals.

Yesterday's machines for today's craftsmen

While the W.F. & John Barnes Company abandoned the manufacture of woodworking machines sometime in the 1920s and turned to oil well pumps, their machines can sometimes be found in the shops of collector/craftsmen still doing the work they were designed to do 100 years ago. One such collector/craftsman is Galena, Missouri's Bob Barnes.

Although the names are the same, Bob shares no relationship to the original company partners. He collects and restores the Barnes machines because they're unique and quite usable.

Decorative feet in the furniture style of the period could be screwed to the floor if necessary.

"The Barnes Company was advanced. They were ahead of their time in the 1870s. Their machinery proves it," Bob told us as he walked from machine to machine, occasionally stopping to demonstrate. He has a complete collection of the machines, and believes he's the only one with them all. And all of his machines work.

At the lathe, Bob pointed out its features and explained its operation: "With the different pedals, people see it and say 'Where do you get a three-legged man to run it?' Well, the reason for the several pedals is to line up with the adjustable seat so you can always sit in front of your work."

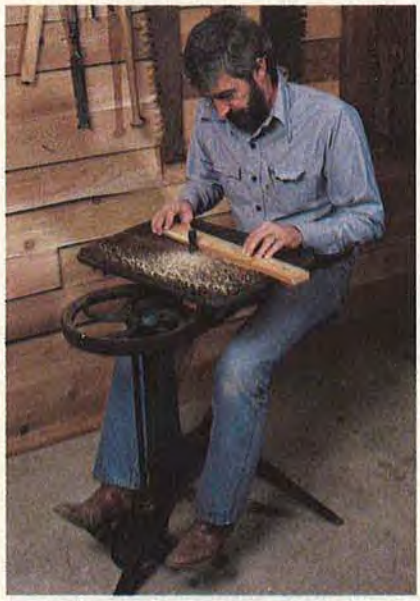
Bob likes one machine, the Velocipede Scroll Saw No. 2 from the Barnes 1907 catalog, enough to market a reproduction. "It's really a pedal-powered jigsaw," Bob explained. "It has a 24" throat, but the base of my reproduction is of cast aluminum to reduce weight. The reproduction weighs just over 40 pounds, where the original weighed 90." Like the original scroll saw, it cuts delicate fretwork and silhouettes. Unlike the original, the Barnes Velocipede Scroll Saw No. 2 reproduction sells for $600.

Barnes noted that the patented foot-power people from Rockford weren't the only manufacturers of such equipment. There was Star, Union, Crickett, Miller's Falls, New Rogers, and Champion, but W.F. & John Barnes was the largest manufacturer of hand- and foot-powered woodworking machinery during the 1800s. And he admires their ability to have kept moving forward.

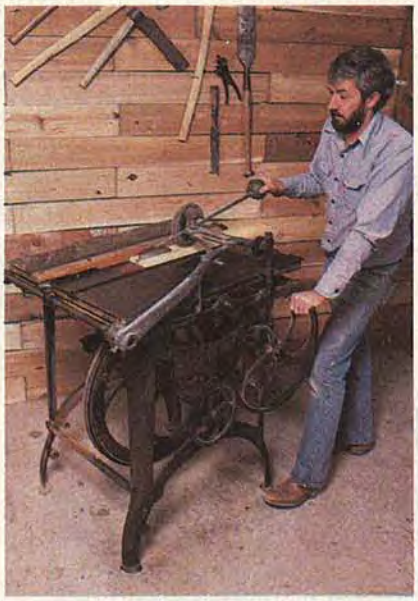
Today, the W.F. & John Barnes Company has disappeared in the conglomerate McDermott Company, with traceable ties to a subsidiary division known as Babcock and Wilcox, a recognized leader in the development of nuclear power reactors.

Photographs: David Jordan

The Foot Power Former, Improved, made articles look costly and elegant with its "rapid and perfect work." Actually a router, it sold for $20 in 1907.



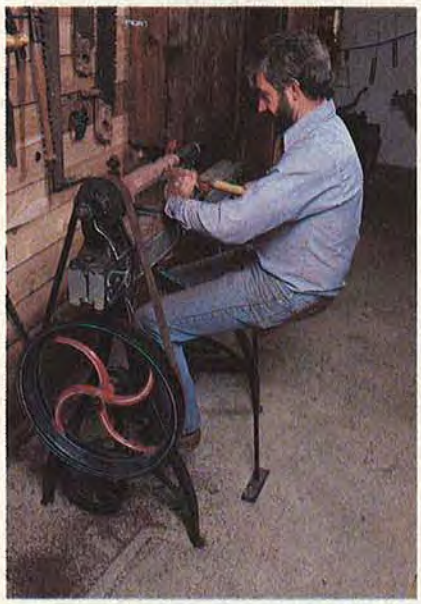
Billed as "the strongest, most powerful and eminently practical foot- and hand-power circular saw ever built," the No. 4 Circular Saw with self-feed cost $60.



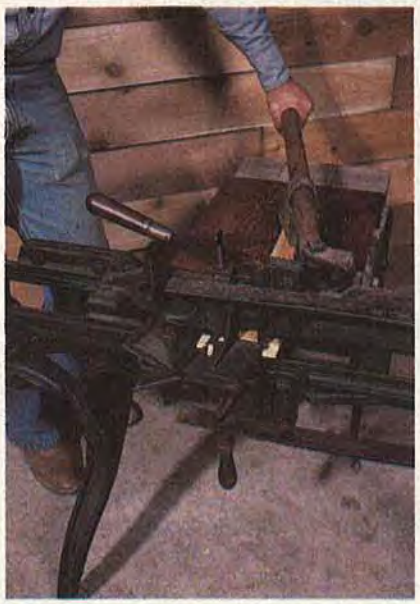
"Almost impossible to get out of order," the Foot Power Mortising Machine used the driving force of coiled spring steel to cut mortises and do light tenoning. The price: $20.

"In order to meet the competition, it is an absolute necessity that a carpenter shall be equipped so that he stands on even terms with all comers"

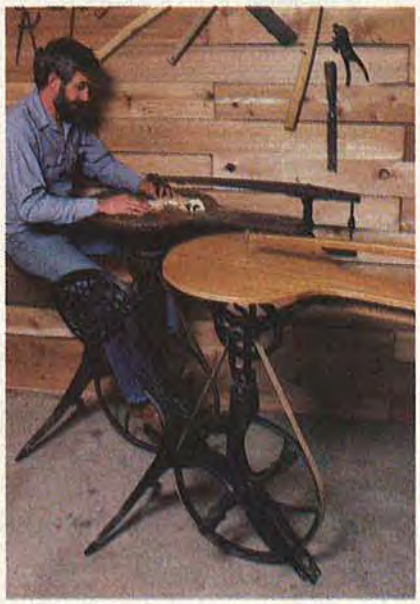
—W.F. & John Barnes Company, 1882



Operators of the No. 3 Lathe could "work steadily without fatigue" and develop speeds to 2,000 rpm. Work could be instantly reversed, started, or stopped—a bargain at $40.



The Hand Tenoning Machine was "a hand machine with which as perfect tenons can be made as with steam power machinery." It cut "true, smooth, square shoulders" for $20.



Bob Barnes' reproduction scroll saw, foreground, duplicates the original, which was "preferred by many on account of the velocipede foot power." It's 1907 price was $20. ■

Any-way-you-want-it modular workbench group

Drawer bridge and roll-around cabinet
See page 44

Scrap bin/ storage drawer unit
See page 43

Organize your tools and your work space with our interchangeable workbench group.

Multi-tool storage unit
See page 42

Photographs: Bob Calmer; William Hopkins Associates
Design: Dave Ashe
Illustrations: Bill Zaun

Bill of Materials

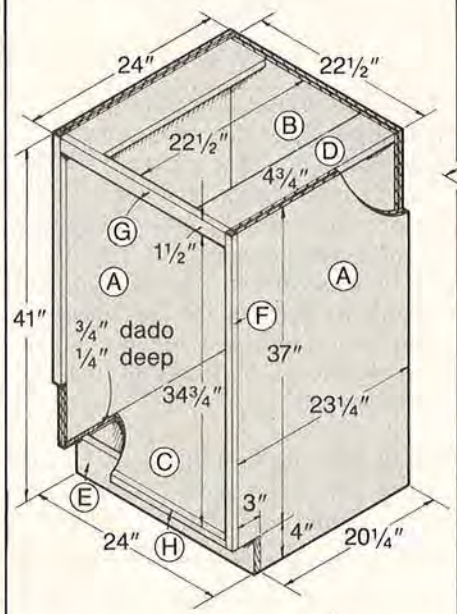
Part	Finished Size* T	W	L	Material	Qty.
The Basic Cabinet Carcass					
A	¾"	23¼"	41"	plywood	2
B	¾"	22½"	41"	plywood	1
C	¾"	22½"	23"	plywood	1
D	¾"	4¾"	22½"	pine	2
E	¾"	4"	24"	pine	1
F	¾"	¾"	37"	pine	2
G	¾"	1½"	22½"	pine	1
H	¾"	¾"	22½"	pine	1
For a 3⅛"-High Drawer					
I	¾"	3⅛"	22⅜"	pine	1
J	½"	3"	22½"	pine	2
K	½"	2⅜"	21"	pine	1
L	¼"	21"	22⅜"	hardboard	1
The Drawer Organizer					
M	⅛"	1¾"	4"	hardboard	2
N	½"	1¾"	3"	pine	2
O	⅛"	4"	4"	hardboard	1
The Shelf					
P	¾"	22¼"	22⅛"	plywood	1
Q	¾"	¾"	22⅛"	pine	1
The Bench Top					
R	¾"	24½"	72½"	plywood	1
S	¼"	24½"	72½"	hardboard	1
T*	1½"	1½"	75½"	pine	1
U*	1½"	1½"	26"	pine	2
The Tool Rack					
V	¾"	3½"	73½"	pine	2
W	¾"	3½"	36"	pine	2
X	¾"	3½"	34½"	pine	1
Y	¾"	3"	18⅝"	pine	2
Z	¼"	18¾"	35¼"	hardboard	1
AA	¼"	34½"	54¾"	perforated hardboard	1
BB	¾"	2½"	54¾"	pine	2
CC	¾"	2½"	33"	pine	3
DD	¾"	¾"	34½"	quarter round	2
EE	¾"	¾"	54¾"	quarter round	2

*Some parts are cut larger initially, then trimmed to finished size. Please read instructions carefully before cutting.

Supplies: drawer pulls, 22" drawer slides, 18—#6×¾" flathead wood screws, shelf support clips, paint, varnish or oil finish

Note: Obviously, all workshop situations vary considerably. And the component system shown opposite takes this fact into account. You can select a grouping from the options shown, or even adapt some of the ideas we present and come up with a system of your own. We've designed lots of "goodies" into these units; here's hoping you like what you see.

CONSTRUCTING THE CABINET CARCASS



1 Rip, then crosscut the cabinet sides (A), back (B), bottom (C), cleats (D), and toe kick (E) to size. (We laid out pieces A, B, and C on a sheet of plywood, then two of us cut them on a table saw. When cutting large pieces, try to enlist a helper. You can guide the piece through the saw while the other person supports the panel.)

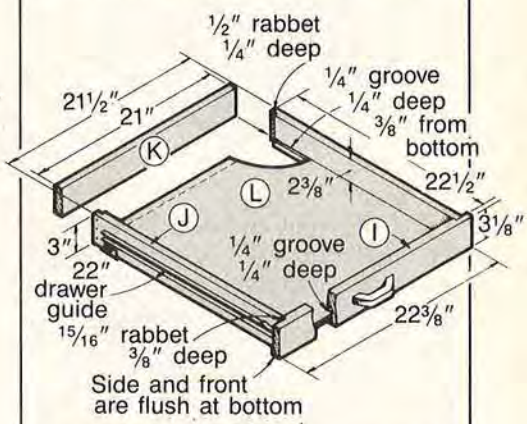
2 Cut a ¾" dado ¼" deep 4" from the bottom edge of the sides to receive the bottom (C). Cut a notch in the front lower corner of the sides. (This notched-out area creates the cabinet's toe kick.)

3 Glue, clamp, and nail the cabinet carcass together as shown in the Cabinet Carcass drawing. While the glue is still wet, check for square with a framing square. (You may have to rack it into square with pipe clamps.)

4 Cut the face frame pieces (F, G, H) to size. Then glue, clamp, and nail them to the front of the cabinet carcass.

5 Sand all surfaces smooth. Mask the face frame and toe kick, then paint the carcass. Later, finish the pine parts with oil.

ASSEMBLING THE DRAWERS



Note: In the Bill of Materials, we specify dimensions for a 3⅛"-high drawer. See the Assembled Cabinet drawing for the heights of the other drawers.

1 To make the drawers, rip, then crosscut the drawer fronts (I), sides (J), back (K), and bottom (L) to size.

2 Cut a ¼" groove ¼" deep and ⅜" up from the bottom of the fronts and sides as shown in the Drawer drawing. Cut 15⁄16" rabbets ⅜" deep on the ends of the drawer front.

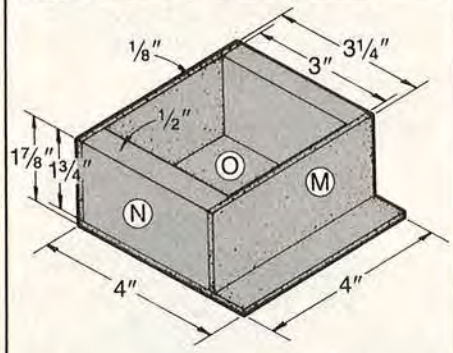
3 Glue, clamp, and nail the drawers together. (Nail the bottom (L) to the bottom edge of the back (K), but do not glue the drawer bottom into the groove; it should float in the joint.) Remove glue squeeze-out before it dries. Later, after the glue has dried, sand the drawers smooth.

4 Install drawer-slide hardware to the sides of the carcass and to the drawer sides. Paint the drawer fronts, then attach pulls to them.

Continued

BUILDING THE DRAWER ORGANIZERS

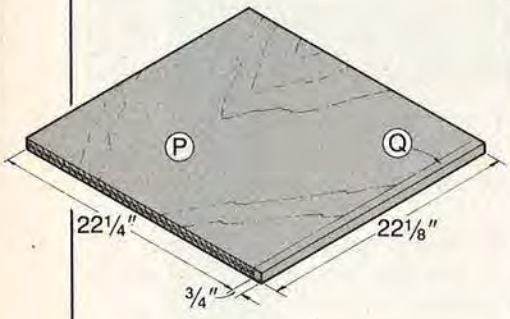
Note: Five drawer organizers per row fit nicely side-by-side. We've specified the dimensions for one organizer in the Bill of Materials. (To keep the organizers in good order, we nailed a cleat behind the back row.)



1 Cut the front and back (M), sides (N), and bottom (O) to size. Then, glue and clamp the parts together as shown in the Drawer Organizer drawing.

2 Sand all surfaces smooth, and then paint.

BUILDING A SHELF

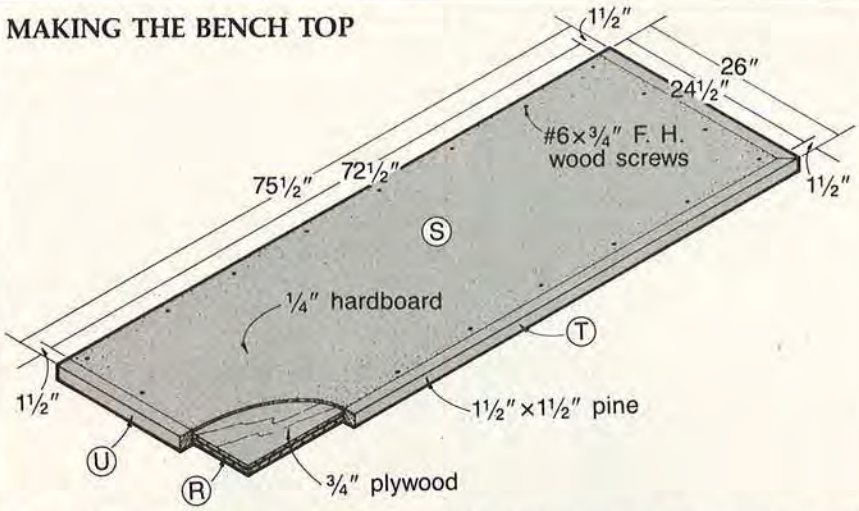


1 Cut the plywood (P) and the pine trim (Q) to size. Glue and nail the pine trim to the front edge of the plywood (see the Shelf drawing).

2 Sand the pieces flush, mask the pine, then paint the plywood. Later, after the paint has dried, remove the masking tape and apply oil finish to the pine.

3 Drill ¼" holes ½" deep on the inside of the cabinet sides (1½" in from the front and back) to house the shelf supports.

MAKING THE BENCH TOP



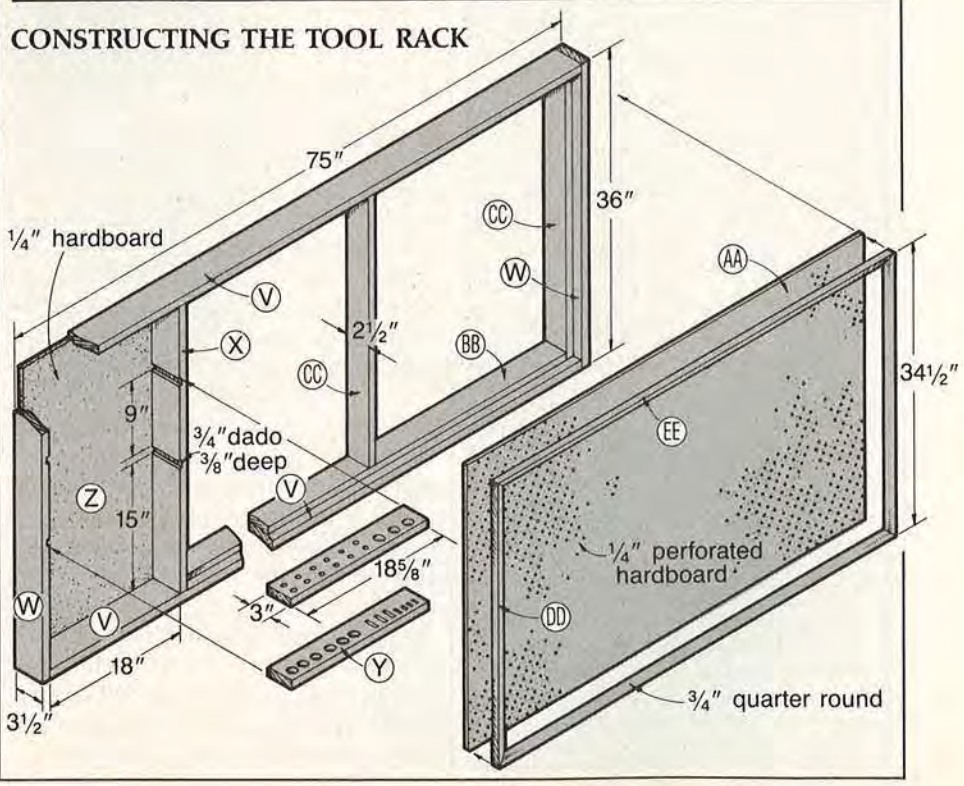
1 Cut the plywood (R) and the hardboard (S) to size. Position the hardboard above the plywood, flush on all edges. Then, drive and countersink screws to hold the hardboard to the plywood. By fastening the two together in this way, you'll be able to flip over the hardboard or replace it with a new piece when it gets battered up. Sand all four edges smooth.

2 Cut the pine trim pieces (T, U) to length plus 1" to allow for trimming. Miter both ends of the front trim piece (T) and one end each of the two end trim pieces (U).

3 Test the fit against R, S, and trim if necessary. Nail the trim pieces flush with the top of the hardboard as shown in the Bench Top drawing (this will leave a ½" lip on the bottom side).

4 Sand all surfaces smooth. Apply an oil finish to the top and trim. (This size benchtop fits nicely over three cabinets.)

CONSTRUCTING THE TOOL RACK



1 To make the basic framework, cut the top and bottom rails (V), stiles (W), center divider (X) and tool holders (Y) to size. Drill holes in the holders to fit your tools. Cut ¾" dadoes ⅜" deep in the left-hand stile (W) and center divider (X) to accept the racks.

2 Glue, clamp, and nail the framework (V, W, X) together (see the Tool Board drawing for how they join), using a framing square to check for square. (We did not glue or nail the racks (Y) into place, just in case we ever want to change the arrangement or size of the holes.)

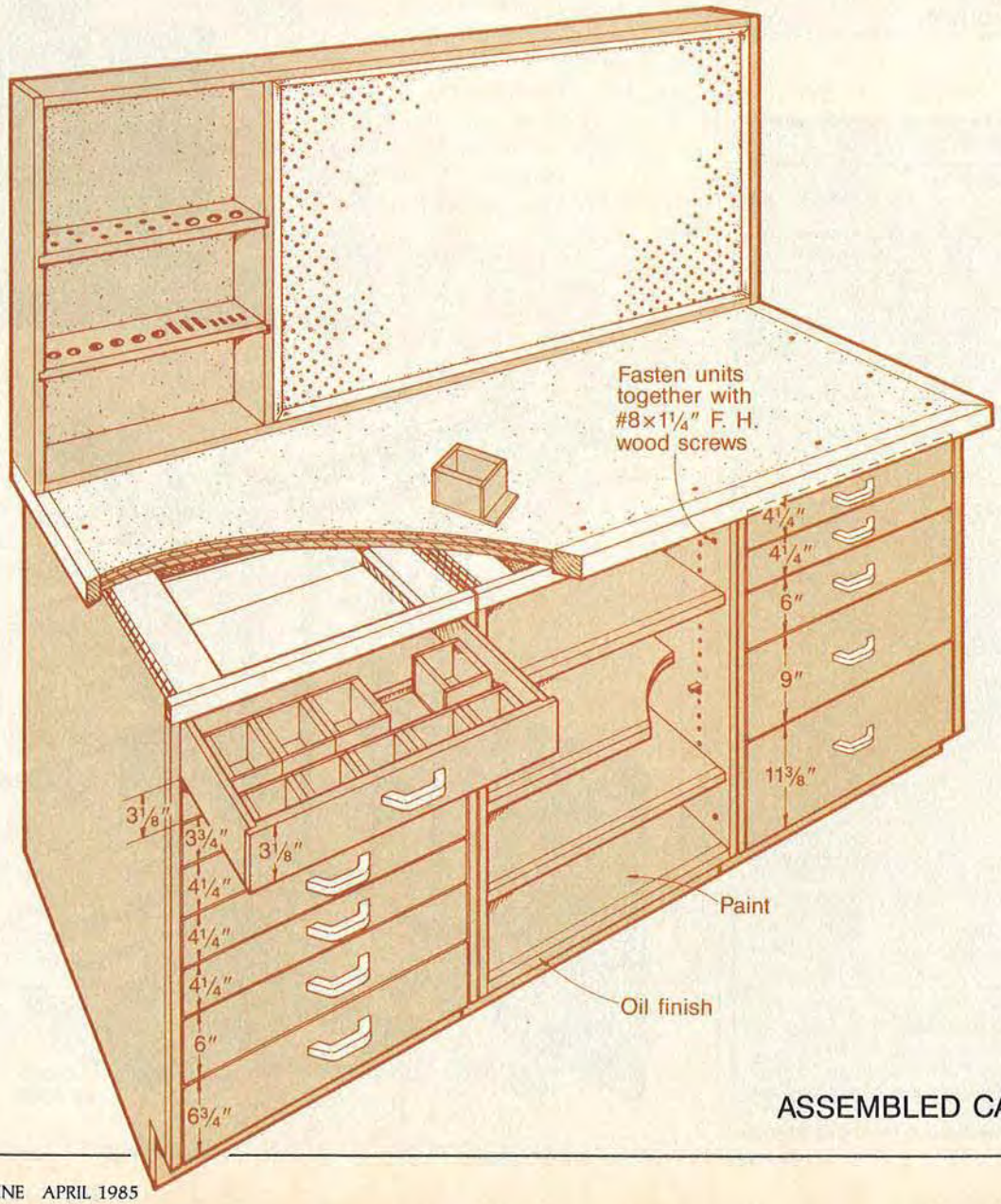
3 Cut the hardboard backing (Z) and the perforated hardboard (AA) to size. Rout a ⅜" rabbet ¼" deep around the portion of the frame the hardboard fits into, then chisel the corners square. Check the fit of both the perforated hardboard and the hardboard in their respective openings. Trim, if necessary, then paint both backing pieces. Later, after the paint has dried, glue and nail the hardboard (Z) in place.

4 Cut parts BB and CC to size (these fit behind and support the perforated hardboard). Glue and nail them in place flush with the back edge of the main frame (V, W, X).

5 Lay a bead of glue on the front edge of BB and CC, then set the perforated hardboard in from the front side.

6 Miter-cut the quarter-round pieces (DD, EE) to length and nail around the perimeter of the perforated hardboard. Finish the pine pieces with oil.

Continued



ASSEMBLED CABINET

multi-tool storage unit

Of all the modules we built, this one ranks #1 in variety. It boasts built-in blade storage and a slide-out tool caddy that houses several often-used tools. Two drawers and adjustable shelves round out this hard-working module.

Design: Dave Ashe
Photograph: William Hopkins Assoc
Illustration: Ron Chamberlain

Build the cabinet carcass as described on page 39, except set back the bottom piece of the face frame ¾" to act as a stop. Cut to size and install the center divider (A), the horizontal support (B), and the shelves (C).

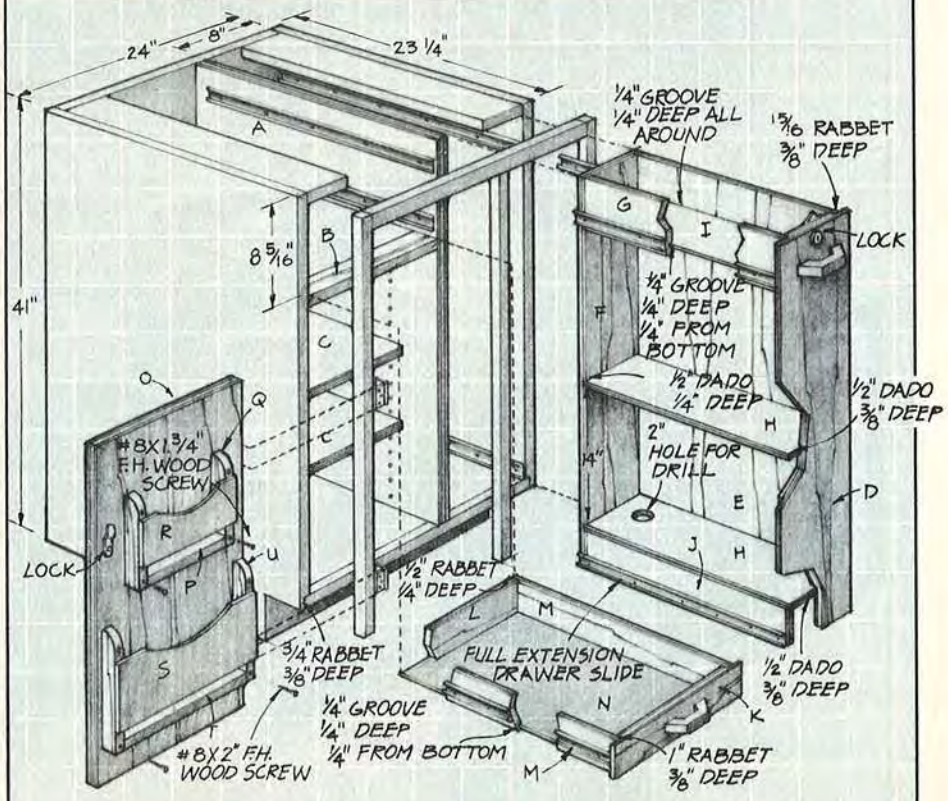
Cut the pieces for the pull-out caddy (D, E, F, G, H, I, J). Then, cut the grooves, rabbets, and dadoes, and assemble. Attach the caddy to the carcass with the 22" full-extension drawer slides. Rip and crosscut the drawer parts (K, L, M, N) to size. Assemble the two drawers as described on page 40 using the dimensions listed below in the Bill of Materials. Cut the door (O) and blade holders (P, Q, R, S, T, U) to size and assemble.

Mask the pine and paint the rest, remove the tape and oil the pine. Let dry and attach the hardware. ■

Bill of Materials

Part	Finished Size T	W	L	Material	Qty.
A	¾"	22½"	36¼"	plywood	1
B	¾"	2"	13¾"	pine	1
C	½"	13½"	20½"	plywood	2
D	¾"	7⅞"	34¾"	plywood	1
E	½"	22"	33¾"	plywood	1
F	½"	7"	33¾"	plywood	1
G	½"	4¼"	22"	plywood	1
H	¾"	6½"	22⅛"	plywood	2
I	¼"	6½"	22⅛"	hardboard	1
J	½"	3"	22"	plywood	1
K	¾"	3⅝"	13⅝"	plywood	2
L	½"	2¹³⁄₁₆"	12⅛"	plywood	2
M	½"	3⅝"	22⅝"	plywood	4
N	¼"	12⅛"	22½"	hardboard	2
O	¾"	13⁹⁄₁₆"	28"	plywood	1
P	¾"	1⅜"	8½"	pine	1
Q	¾"	1⅜"	7"	pine	2
R	⅛"	4"	10"	hardboard	1
S	⅛"	6½"	12¾"	hardboard	1
T	¾"	1¾"	11¼"	pine	1
U	¾"	1¾"	9⅝"	pine	2

Supplies: Paint, 2 pairs—22" drawer slides, 4—wood pulls, 2—2" flathead wood screws, oil or polyurethane finish, 2—cabinet locks, 2 pairs—22" full-extension drawer slides, 4—#8×1¾" flathead wood screws, 8—shelf support clips



scrap bin/ storage drawer unit

If you're like us, you find it oh so hard to throw away even the smallest piece of oak or the slimmest sliver of rosewood. After all, you just never know! This module allows you to keep lots of scrap neatly hidden, and there's plenty of room inside the two drawers for miscellaneous tools and other shop paraphernalia.

Start by building the carcass and face frame as described on page 39, then add the horizontal divider (A) and its corresponding face-frame piece (B). Rip, then crosscut the drawer pieces (C, D, E, F) to size, then using the same drawer construction as that on page 40, assemble the two drawers. (Cut three pieces of F, as you'll need one piece for the bottom of the scrap bin.)

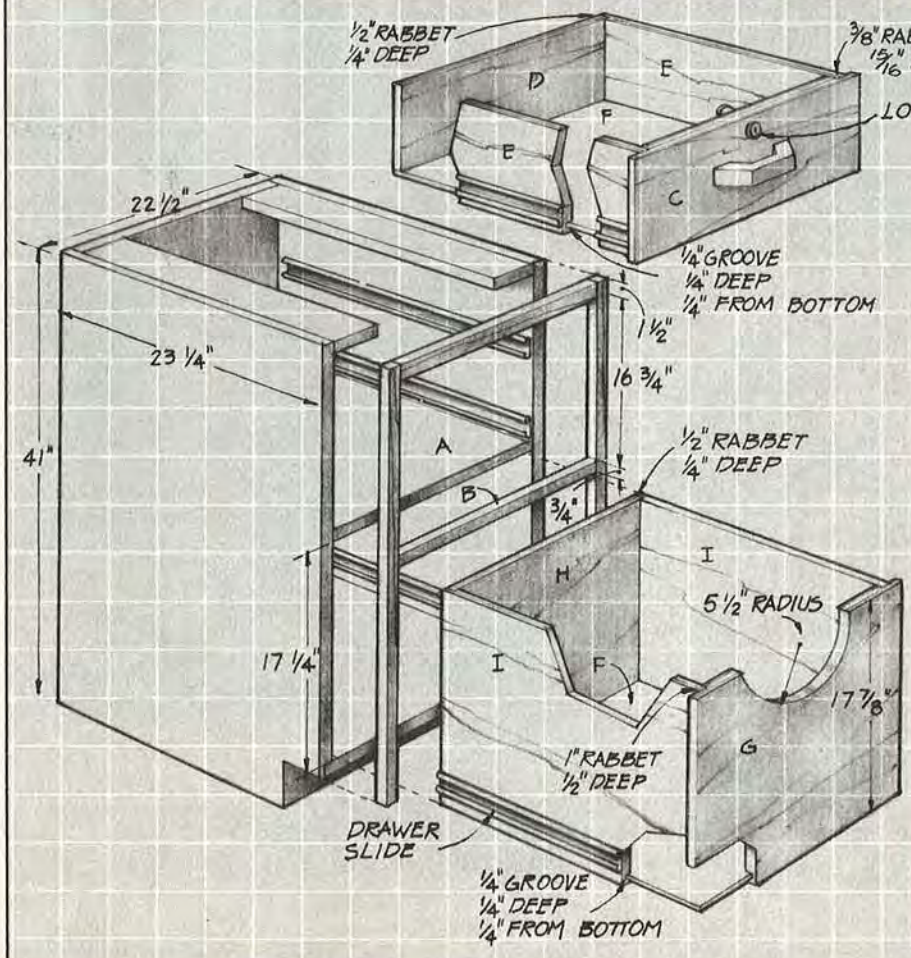
Cut the scrap bin pieces (F, G, H, I) to size. Using a saber saw, cut the drawer front opening to size. The large opening is great for tossing in scrap pieces without having to stop and pull open the drawer. If you don't need scrap storage, eliminate the opening and add a drawer pull. Cut the rabbets in the bin door front and at the back of each drawer side, and the grooves in the front and sides. Glue and clamp the bin together.

Mask the pine parts and paint the rest as shown in the photo. Remove the tape, then after the paint has dried, finish the pine trim with either oil or polyurethane. Attach the drawer slides and drawer pulls. ■

Bill of Materials

Part	Finished Size T	Finished Size W	Finished Size L	Material	Qty.
A	¾"	22⅛"	22½"	plywood	1
B	¾"	¾"	22½"	pine	1
C	¾"	8¼"	22⅜"	plywood	2
D	½"	7¾"	21"	plywood	2
E	½"	8¼"	22⅝"	plywood	4
F	¼"	21"	22½"	hardboard	3
G	¾"	17⅞"	22⅜"	plywood	1
H	½"	16½"	21 1/16"	plywood	1
I	½"	17"	22⅝"	plywood	2

Supplies: Oil or polyurethane finish, 3 pairs—22" drawer slides, 2—wood pulls, 2—locks, paint



Design: Dave Ashe
Photograph: William Hopkins Assoc
Illustration: Ron Chamberlain

drawer bridge & roll-around cabinet

Go to where the action is with this winning combo. The tool totes pull out, and the roll-around unit slides out of its cubbyhole for help where you need it.

Bill of Materials					
Part	Finished Size			Material	Qty.
	T	W	L		
Drawer Unit					
A	¾"	22½"	22½"	plywood	2
B	¾"	8¼"	23¼"	plywood	2
C	¾"	6¾"	22½"	plywood	1
D	¾"	8¼"	22½"	plywood	1
E	¾"	¾"	22½"	pine	1
F	¾"	¾"	8¼"	pine	2
G	¾"	¾"	6"	pine	1
H	¾"	1½"	22½"	pine	1
I	½"	5⅞"	22⅞"	plywood	4
J	¾"	5⅞"	10¼"	plywood	2
K	¼"	10¼"	22¼"	hardboard	2
L	¾"	5⅞"	10¾"	plywood	2
Roll-Around Cabinet					
M	¾"	22"	22½"	plywood	1
N	¾"	23¼"	31¼"	plywood	2
O	¾"	22⅞"	23¾"	plywood	1
P	¾"	22"	31¼"	plywood	1
Q	¾"	2"	22"	plywood	1
R	¾"	4¼"	23½"	pine	1
S	¾"	¾"	22"	pine	1
T	¾"	¾"	27"	pine	2
U	¾"	1"	23½"	pine	2
V	¾"	1"	24"	pine	2
W	¾"	10⅞"	23"	plywood	2
X	¾"	3"	21⅞"	plywood	1
Y	½"	2½"	20⅝"	plywood	1
Z	½"	3"	22⅝"	plywood	2
AA	¼"	20⅝"	22¼"	hardboard	1

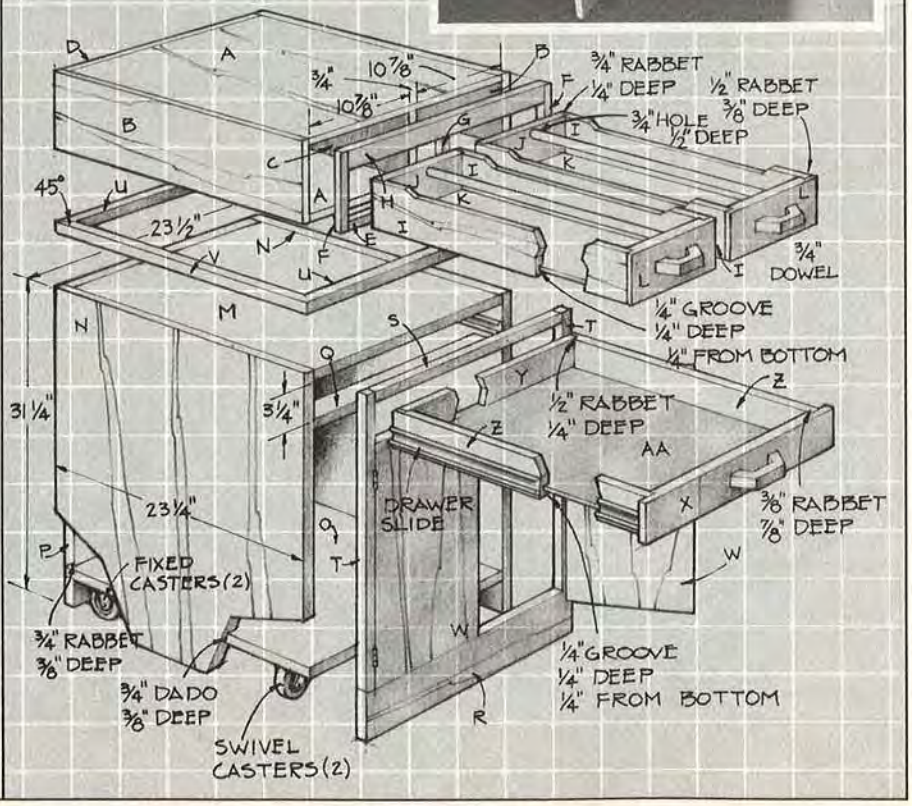
Supplies: Paint, 1 pair—22" drawer slides, 5—wood pulls, 4—2" wraparound hinges, oil or polyurethane finish, 2—¾" x 21⅜" dowels, lock and catch, 2—4" swivel casters, 2—4" fixed casters

Construct the bridge-unit carcass (A, B, C, D) by ripping, then crosscutting the pieces to size and assembling. Cut the face-frame pieces (E, F, G, H) to size, then glue and nail them to the bridge unit. Cut and assemble the tool-tray drawers (I, J, K, L). (Use the drawer construction procedure described on page 40 and the dimensions given in the Bill of Materials.)

To build the roll-around, cut the carcass pieces (M, N, O, P, Q) and frame pieces (R, S, T) to size and assemble. Now, add the lip (U, V) to the top of the unit. Cut the doors (W) to size and attach. Finally, cut the drawer parts (X, Y, Z, AA) to size and assemble.

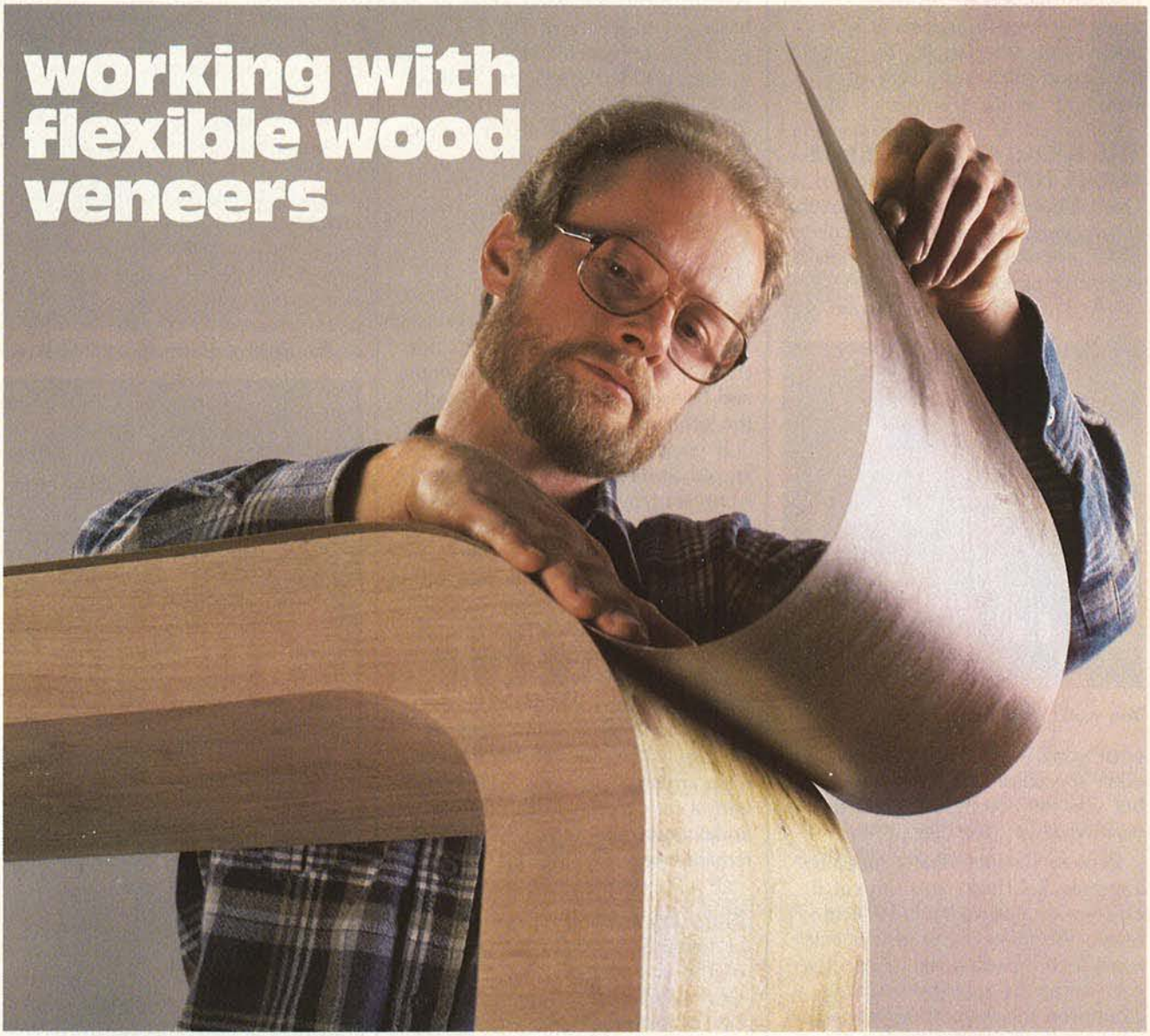
Mask the pine pieces with tape and paint the rest. Remove the tape and after the paint dries, finish the pine with oil or polyurethane. Attach the casters to the rollout and screw the bridge unit between two adjacent cabinets. ■

Design: Dave Ashe
Photograph: Scott Little
Illustration: Ron Chamberlain



VENEERING BASICS

working with flexible wood veneers



Goodbye, veneer presses, long glue-drying times, and random-width strips that require straight-line ripping before application. Hello, paper-thin backed real wood veneer.

Print this article

Photographs: Bill Hopkins Associates
Illustrations: Herb Dixon

You can apply this factory-matched and machined product over existing furniture pieces, cabinets, and other such items to make them look brand-new. Or, on new projects, lay it down over an inexpensive substrate when you want the look of a beautiful domestic or imported wood—easily and more quickly than you might have thought possible.

Continued

We think that inexperienced and veteran woodworkers alike will appreciate the many merits of this thin-skinned, flexible material. And as you'll realize after you read through this article, learning to apply it correctly and expertly doesn't take long at all. You should have good success the very first time you use it.

THE TOOLS AND MATERIALS YOU'LL NEED

One of the things we like so much about backed flexible wood veneers is that we don't have to have lots of expensive equipment to get the job done. The photo below shows

You won't need many tools

what you'll need. You can buy other specialized tools, if you want, but you can accomplish good results with what you see here.

Because flexible veneer measures a minute 1/64" thick, you can cut it easily with a sharp-bladed X-acto knife. We make many of our cuts using a cork-backed steel ruler (the cork keeps the ruler from sliding around on the veneer). The masking tape keeps mating pieces of veneer stabilized while cutting and while butting the edges of two adjoining pieces together.

You'll need some solvent-base contact cement (the nonflammable type), a supply of waxed paper, and an inexpensive brush or roller for applying the cement (we like a roller best for large projects). And to make sure that the veneer bonds well to the substrate, you'll need a scrap wood tap block and a mallet and/or a commercially available veneer roller.

And finally, just in case you position the veneer incorrectly when you lay it down (accidents do happen occasionally), you'll want to have a syringe and needle and some Formby's or Hope's refinisher handy to help lift off the veneer. Both of these products contain a chemical that breaks the bond of the contact cement quickly and easily.

PREPARING THE SURFACE FOR THE VENEER

No matter what material you put veneer onto—solid wood, plywood, particleboard, or hardboard—the surface must be smooth. If it's not, chances are good that those bumps and bruises will telegraph through the veneer.

If you're putting a new face on an old furniture piece or cabinet front, start by filling in any indentations in the surface and regluing any splintered wood or loose veneer. We've had good luck with Durham's Rock Hard Putty for filling holes and other blemishes. (If the piece is in terrible shape, you may be best off removing loose veneer.) Then, sand the surface smooth, and remove the resulting sawdust with a few blasts of air from an air compressor hose or with a tack cloth. With projects under construction, the procedures remain essentially the same.

Note: If you plan to shape the edges of a project in which you've used one of the composition materials (or a solid wood other than the veneer species) as a substrate, you'll want to add an edging to those surfaces that will be shaped. (We use a solid wood edging of the same species as the veneer.) Be sure to figure in the width of the edging when determining the size of the various substrate parts.

MAKING UP FOR WIDTH

Though you can mail-order flexible veneer in sheets up to 4'×12' long, you'll find yourself in situations from time to time in which you'll need to edge-join two narrow pieces of veneer together.

Joining Manufactured Edges

From the factory, flexible veneers come with straight edges that make joining two pieces quite manageable. Of course, before doing anything, you should check to make sure that they haven't been banged up in any way.

Start by butting the two pieces together and settling on a grain match that appeals to you. Then, turn over one of the mating pieces and lay down a piece of masking tape so that about half of it overlaps the seam line. Now, turn that same piece over and butt the edge of the mating piece up against it as

Joining factory-edged veneer

shown in the photo above. To make sure you have a good bond between the tape and the veneer, run your fingernail along the seam line. (If you don't like the way the joint turned out, just pull the pieces apart and have at it again.)

If everything looks good, lay a strip of masking tape along the front side of the joint line (this stays put until you apply the veneer), and remove the tape from the back side. That's all there is to it; you're ready to apply the veneer as a single piece.

Joining Pieces with Irregular Edges

Especially when you're working

Overlapping veneer with irregular edges

with small, leftover pieces of veneer, you won't usually have straight edges to work with. But with flexible veneers, that's not a handicap in the least. Simply lay out the mating pieces, face up, and overlap them by ½" or so (make sure that you're satisfied with the grain match).

Now, tape the two pieces together with masking tape as shown in the photo above. Turn the veneer over, then once you're certain you know where the two pieces overlap, cut through both thicknesses of veneer with a sharp-

Double-cutting from the back side

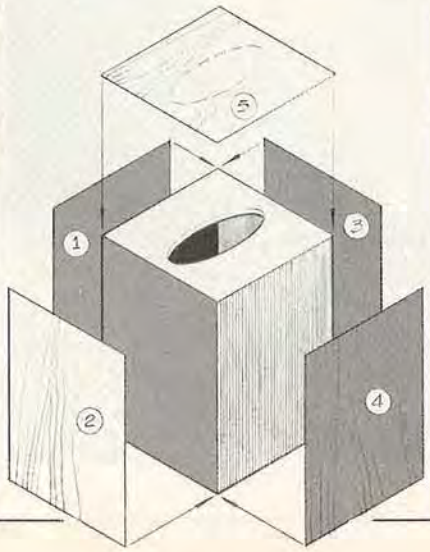
bladed X-acto knife, as shown here. (You can do this freehand, if you want; actually, it's harder for the eye to see a crooked line than a straight one.)

Carefully remove the scrap pieces and fit the mating pieces together to check for a good fit. When you're satisfied, join the pieces with masking tape.

APPLYING THE VENEER

Note: When veneering a tabletop, cabinet door, shelf, or any other "floating" element, you must veneer both sides to keep it in balance. Veneering only one side may result in warping. You can save money by using a less-expensive veneer on the back side or underside.

Before you actually apply contact cement to the veneer or the substrate, you must first determine the sequence of application. Let's take a simple example to illustrate. Say you want to veneer a tissue box cover like the one shown below. You would start by veneering the back, then move to the sides, then the front, and finally the top. By progressing in this order, you minimize the effect of the seams.



And to minimize waste, lay the veneer face down on a flat surface, and lay the object to be veneered on top of the veneer. Trace the outline of the object as shown here,

Tracing shape of item

then cut the veneer a bit oversize (we allow at least ½" all around).

Apply two coats of contact cement to the veneer and the substrate, allowing time to dry between coats. (Some brands of contact cement lose their gloss when they dry; others dry clear.)

Note: For obvious reasons, we recommend that you use a nonflammable contact cement and that you work in a well-ventilated area. We've had quite good luck with 3Ms Fast Bond 30, a nonflammable, nonodorous product, as well as Constantine's Veneer Glue.

Now (especially if you're veneering a surface of any size), gently lay a sheet of kraft paper, waxed paper, or freezer paper onto the substrate as shown at the top of the next page. (Doing this prevents the veneer from grabbing the substrate before you want it to.) Remember, it's difficult to separate them.

Continued

Easing veneer into place

Carefully align the veneer over the substrate, then press the veneer into place. Withdraw the paper an inch or two at a time and continue pressing the veneer from side to side as shown below until the entire surface has been covered. Continue to smooth the veneer with your hands, checking for any trapped air bubbles while doing so. If you spot any of them, slit the veneer along the grain with your X-acto knife as shown in the photo below. Then,

Deflating air bubbles

press toward the slit with your fingers to remove the trapped air.

To make sure that there's a good bond between the substrate and the veneer, tap the surface with a block and mallet as shown at the top of the next column, or roll it with a commercially available veneer roller. (Work from one end to the other, or from the center out, again watching for bubbles.)

Ensuring good contact

Now, trim the excess veneer that overhangs the edges. We usually lay the veneered surface face down on a backing block and trim the excess. But you can also cut the excess away as shown in the photo below. (Some WOOD staffers prefer a veneer saw to do the trimming; others like an X-acto knife

Trimming panel edge

because they insist it does as good a job, and does it much more quickly. We haven't had any problems with the knife veering off and following the grain.)

Once you have finished trimming the veneer, sand it with a sanding block fitted with 80-grit sandpaper. Make sure you don't round-over the edges as you're sanding. And don't sand too long in any one spot. Remember, you're dealing with a 1/64"-thick layer of wood.

Pressing the veneer from side to side

WHAT TO DO IF THINGS GO WRONG DURING APPLICATION

Nothing is perfect, right! It could happen that when applying the veneer, you misjudge its position, and before you realize it, the contact cement on both surfaces has made contact. Don't panic!

If you realize you've made a mistake before the veneer is completely down, lay hold of your refinisher-filled syringe. Spread some of the refinisher along the point of contact as shown in the photo below, then carefully lift off the veneer.

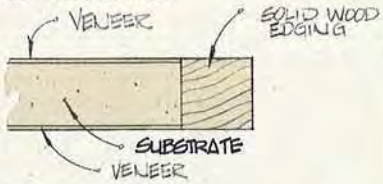
Sometimes you won't notice that the veneer didn't cover the substrate entirely until it is completely down. In this case, you simply patch the uncovered area with a scrap piece of veneer as shown at left. Of course, you'll want to be sure to carefully match the grain before butting the patch piece against the other veneer.

Patching a mistake

Using refinisher to release the bond

APPLYING SOLID WOOD EDGINGS

Start by cutting the material the same thickness as the material you're attaching it to, and just a bit wider than necessary to accommodate the shaped edge. Then, glue and clamp the edging material, but only after making sure its thickness matches the mating material. After the glue has dried, sand all surfaces flush and smooth.



HOW TO FINISH YOUR VENEERED PROJECT

As with any other woodworking project, the smoother the surface when you apply the finish, the better the finished product will look. Fortunately, flexible veneers are sanded smooth at the factory, so a light finish-sanding will do. If you have routed the edges of the work, careful hand-sanding is in order.

You can stain, fill, and finish flexible veneers, but keep in mind that oil and contact cement don't get along too well. If oil penetrates the veneer and makes contact with the adhesive, you can be certain delamination will occur. We've found that several thin coats of polyurethane varnish make a good topcoat for veneered projects. (Some veneer experts insist that you can apply oil finishes sparingly with good results, but we haven't had much luck with oil-base products.)

Note: As always, test the finishing products on scrap to see what finish they will produce before applying them to your project. ■

"Gift-Wrapped" tissue box cover

A great first veneering project, this one-evening wonder will make you look like a veneering pro—and feel like one, too.

Photograph: Bob Calmer Illustration: Bill Zaun

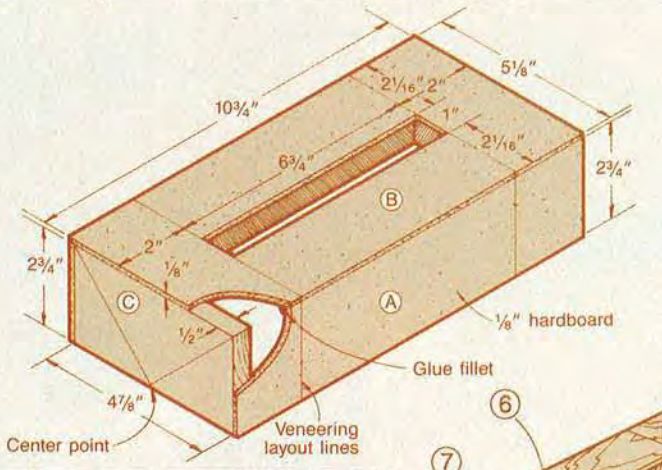
Building the Box

1 Rip, then crosscut the hardboard sides (A), top (B), and the pine ends (C) to size.

2 Glue and clamp the pieces together to form the box as shown in the cutaway drawing. To increase the strength of the joints, apply a fillet of glue between A and B as shown. After the glue has formed a tough skin, remove any excess except for the glue fillet.

3 Sand the outside of the box, being careful not to round the edges. (We recommend that you hand-sand the surfaces with a sanding block and medium-grit sandpaper.)

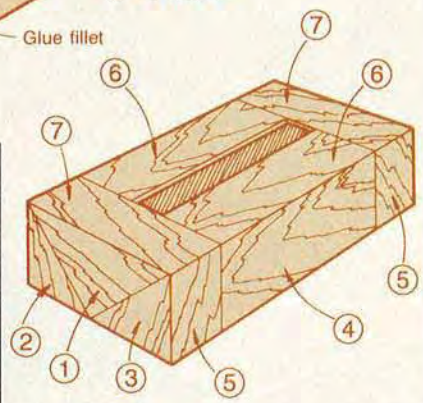
4 Mark the opening on B using a square. While doing this, extend the lines defining the opening's length across the top and down the sides of the box as shown in the cutaway drawing (these lines will be used later for veneer placement). Cut the opening to size with a saber saw.



Bill of Materials

Part	Finished Size T	W	L	Material	Qty.
A	⅛"	2¾"	10¾"	hardboard	2
B	⅛"	5⅛"	10¾"	hardboard	1
C	½"	2¾"	4⅞"	pine	2

Supplies: contact cement, veneer, stain, polyurethane



7¼" × 36" CHERRY VENEER

Cutting diagram

Continued on page 77

Sleek, smooth, and very contemporary, this oak veneer end table speaks clearly yet with warmth about your good taste and your skill as a woodworker. A larger version of this same design will work equally well as a sofa table or buffet table.

Print this article

Over-Easy waterfall table

Photographs: Bob Calmer; Bill Hopkins Associates
Illustrations: Bill Zaun

Continued

Building the Framework

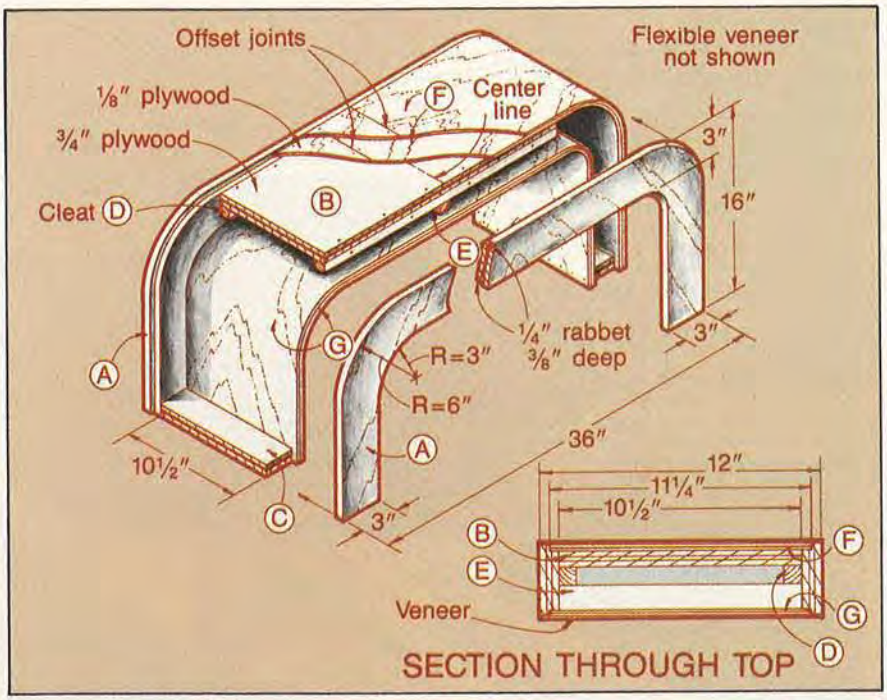
1 Lay out and mark the framework parts (A, B, C) on the back side (opposite the face or good side) of the ¾" plywood sheet as shown in the Cutting Diagram and as dimensioned on the exploded-view drawing and in the Bill of Materials. Cut the side panels (A) slightly oversized, then, to avoid chipping, clamp them face-to-face and make the finish cuts. With the pieces still clamped together, sand the edges flush to the layout line to obtain two identical pieces.

2 With the side panels laying face-down, rout a ¼" rabbet ⅜" deep on the inside and outside edges to house the plywood skin you'll apply later.

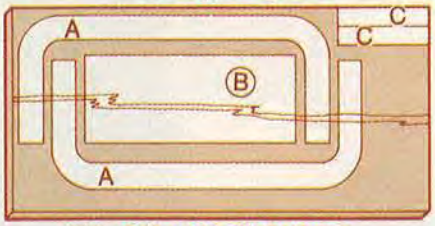
3 Cut the spreaders (B, C), cleats (D), and center support (E) to size. (The top spreader (B) sits flush with the bottom of the rabbet, and the cleats hold it there. See the section view.) Measure to find the center of the cleats and the side panels, then glue, nail, and clamp the cleats to the panels. (We drove finish nails from the inside to prevent the cleats from slipping out of position during clamping.) After the glue has dried, remove the clamps, then glue, nail, and clamp the spreaders (B, C) in place.

4 Glue, nail, and clamp the support (E) to the bottom side of the cleats in the center of the table as shown in the exploded-view drawing. (The support serves as a joining location and a nailing surface for the first layer of ⅛" plywood on the underside of the table.)

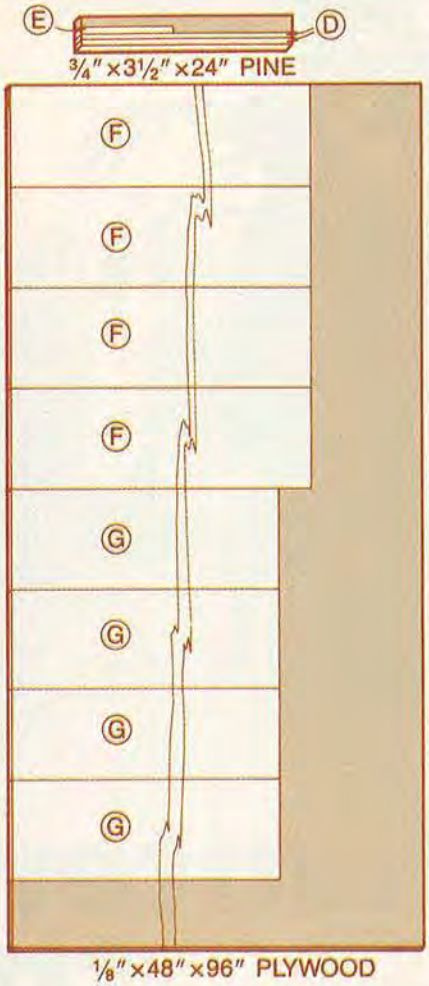
5 Cut the ⅛" mahogany veneer plywood panels (F, G) to width, then cut each panel to the length given in the Bill of Materials. This length allows for overlap on the ends, which you can trim off later. (We used two layers of ⅛" plywood for the base to which the veneer is applied because of the flexibility needed to wrap the material around the curved ends of the frame.)



Cutting diagram



¾"×24"×48" PLYWOOD



⅛"×48"×96" PLYWOOD

Bill of Materials

Part	Finished Size T	W	L	Material	Qty.
A	¾"	16"	36"	oak plywood	2
B	¾"	10½"	24"	oak plywood	1
C	¾"	2½"	10½"	oak plywood	2
D	¾"	¾"	24"	pine	2
E	¾"	1"	10½"	pine	1
F*	⅛"	11¼"	32½"	mahogany veneer plywood	4
G*	⅛"	11¼"	28½"	mahogany veneer plywood	4

*Plywood panels are cut to the dimensions given above to ensure an overlap.

Supplies: flexible oak veneer—exact size of top = 12"×62⅞" and bottom = 12"×53¼" (remember to cut the pieces oversize for an overlap), brads, contact cement, wood putty, water-base stain, polyurethane

6 Find and mark the center of the table. Then, tack both of the top panels (F) at that point with brads, lay a bead of glue along the length of the rabbets, and working out from there, glue and nail the top panels into the rabbet. Run a zig-zag bead of glue over the first layer for adhesion to the second. Then, apply the second layer of plywood over the first, offsetting the joint.

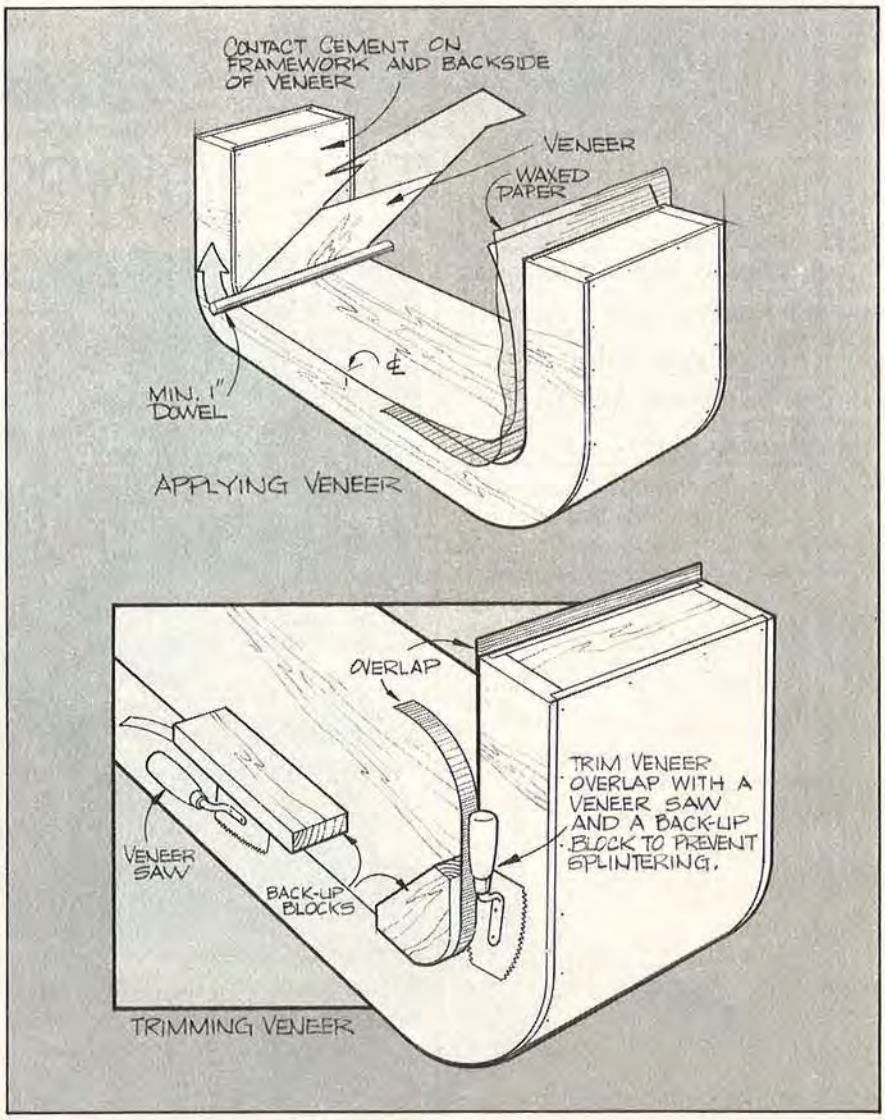
7 Using the same procedure as described in step 6, glue and nail the bottom panels (G) in place. (We had some trouble bending the panels around the curved ends on the bottom side of the table. We solved this problem by applying hot water to both sides of the panels at the point of curvature as shown in the photo below.) Clamp curved blocks, as shown in the photo, to pull the plywood into position on the inside curves. Then,

continue to glue and nail the rest of the plywood to the frame.

8 Trim the overlap of the plywood panels at the foot of each end. Fill all joints and nail holes with putty. Sand all surfaces smooth and flush, being careful not to round over the edges.

Applying the Flexible Veneer

1 Cut the veneer to size plus 1" extra (finished size is stated in the Supplies) in all directions for an overlap on the ends and sides. Mark the center of each piece of veneer for later positioning onto the frame.



2 Apply two coats of contact cement to the underside of the table and to the back side of the veneer.

3 Place waxed paper between the veneer and the frame (once the two mating surfaces come in contact with each other, there is no easy way to realign them). Starting at the center and working out from there, press the veneer into position, using a dowel as shown in the drawing below. (We discovered that this is one of those two-person tasks. Things seemed to work better when one person held the veneer safely away from the plywood while the other rolled the veneer into position with the dowel.)

4 Trim the excess veneer, using a veneer saw and backup block as shown in the drawing (or an X-acto knife). Then, lightly sand the veneer flush.

5 Apply and trim the top veneer using the same method you used on the bottom side.

6 Finish-sand, being extremely careful not to sand through the veneer or round off the edges. Stain, if desired, and finish with several coats of polyurethane. (We advise using a water-base stain.) ■

The Old Hand Ways

THE JOINER

. . . this fellow will but join you together as they join wainscote; then one of you shall prove a shrunk panel and, like green timber, warp, warp.

William Shakespeare's
As You Like It

Print this article

By Roy Underhill

Master housewright at Colonial Williamsburg, host of the highly successful P.B.S. series The Woodwright's Shop, *author, lecturer, and master craftsman.*

The adjustable plow plane is an essential tool of the joiner.

Shakespeare wrote these lines comparing a sham wedding to shoddy joinery in 1598, exactly one year after he bought his new house in Stratford on Avon from my ancestor, William Underhill. It's comforting to know that your work can serve as an inspiration to others.

A century later, Joseph Moxon, in his book *Mechanic Exercises*, offered a definition of joinery as it should be: "Joinery, is an art manual, whereby several Pieces of Wood are so fitted and join'd together that they shall seem one intire Piece."

This is much the same as carpenter's work but for the fact that ". . . Joiners work more curiously, and observe the Rules more exactly than Carpenters need do."

Planes and Benches— The Joiner's Realm

Long before carpenters completed framing Shakespeare's house, the joiners would have been at work making his doors and windows, staircases, and trim. Quite likely, their work would not even be undertaken at the construction site but rather at their joiner's shop in the village. Here, they kept their glue pots and wood, their saws, mallets, and chisels, and, most significantly, their planes and benches.

The joiner's territory is marked by planes and benches. The two go together like carpenters and beer. One is not much good without the other. When woodworking planes were first developed during the Roman era, they created the need for a long level surface to support the work at convenient height. For the joiner of average stature, this height is about 30".

Even if he doesn't indulge in fancy moldings, the joiner needs lots of planes. Just as the ten speeds on a bicycle match the rider's strength to varying terrain, the joiner's key to efficiency is to use a tool that is precisely suited to each stage of the work. The joiner's planes make progressively finer and broader cuts as the work progresses. Trying to bring rough stock to precision dimensions with a single plane is like riding a one-speed bike in a hilly town.

The Work of the Plane

Starting off with a relatively short *scrub* or *jack plane* that has its iron (as the blade is called) ground to a convex profile, the joiner can quickly level the surface. The parallel hollows left by this initial step can then be smoothed by the finer-cutting *trying plane* and the final, dead level surface rendered by the *jointer.*

Continued on page 75

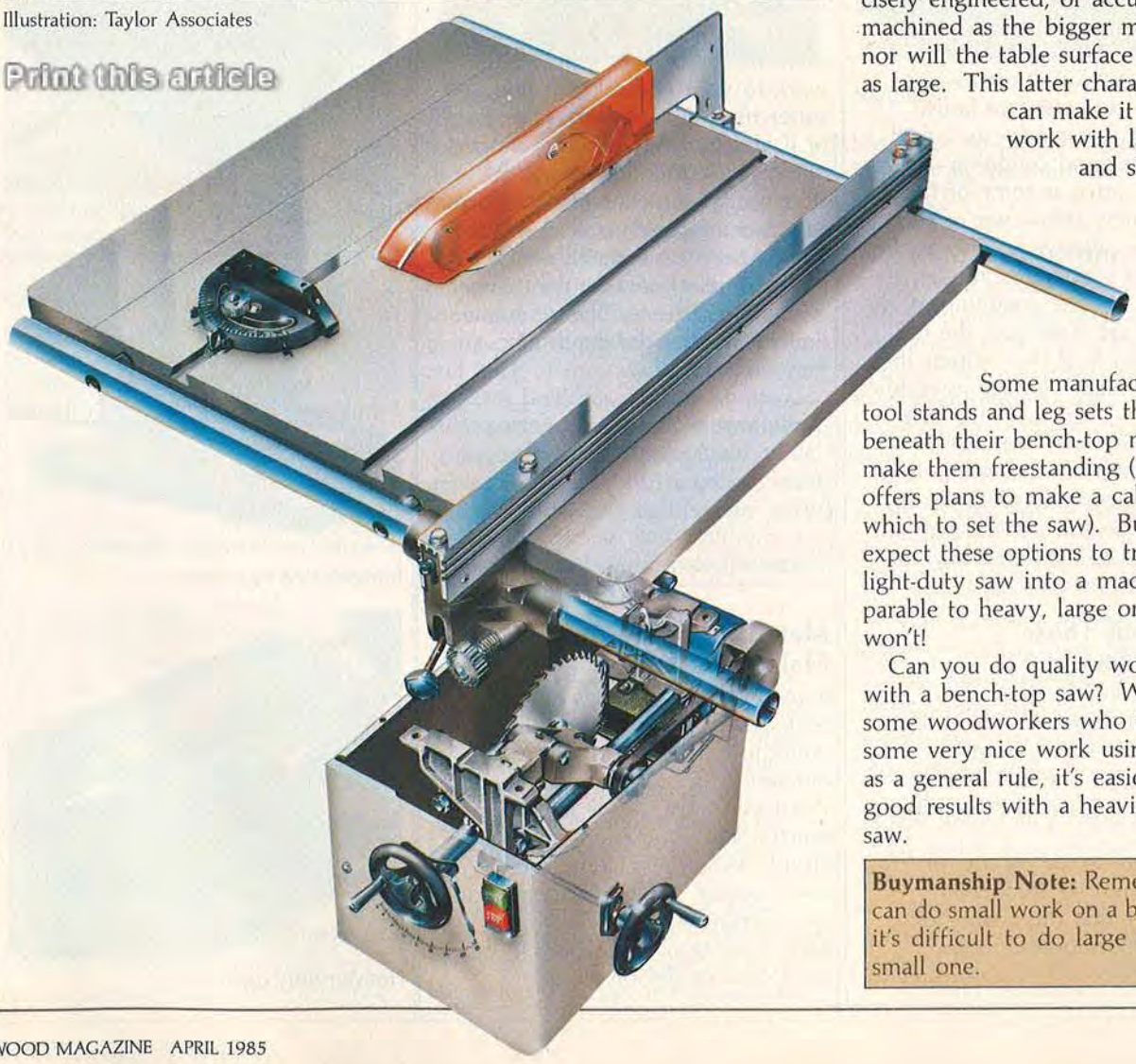
TABLE SAWS

how to choose the right machine for your shop

Whether you're a first-time buyer or a veteran woodworker looking to upgrade your equipment, it's going to take some study to make sure you make the best possible table saw purchase. New products continue to come to market, giving you more options than ever before. This article answers many of the questions you'll be asking yourself as you arrive at your decision.

Illustration: Taylor Associates

Print this article



Do You Need a Stationary Saw Or Will a Bench-Top Model Do?

To answer this question, you have to analyze your particular woodworking situation. If you're just getting started in the hobby, on a limited tool budget, don't have room to devote to a full-size table saw, or do only small-scale projects, the bench-top option *may* make sense for you. Typically, bench-top saws cost only about half as much as the least-expensive floor models, but keep in mind the trade-offs associated with this lower cost. You won't get a tool that's as heavy-duty, precisely engineered, or accurately machined as the bigger machines, nor will the table surface be nearly as large. This latter characteristic can make it difficult to work with large boards and sheet goods.

Some manufacturers offer tool stands and leg sets that attach beneath their bench-top models to make them freestanding (one even offers plans to make a cabinet in which to set the saw). But don't expect these options to transform a light-duty saw into a machine comparable to heavy, large ones. It won't!

Can you do quality woodworking with a bench-top saw? We know of some woodworkers who have done some very nice work using one, but as a general rule, it's easier to get good results with a heavier, larger saw.

Buymanship Note: Remember, you can do small work on a big saw, but it's difficult to do large work on a small one.

Continued

A stationary table saw, if you have the room for one, has several advantages over its bench-top counterpart. First, it has a heavy-duty blade carriage assembly, which increases cutting accuracy. Second, the large tabletop makes for more control when cutting larger goods. Third, because this tool is stationary, you don't have to get it out and put it away every time you use it. And if you've done any amount of woodworking, you know how time consuming this can be. And lastly, if you ever decide to trade up, a stationary saw has better resale value.

Should You Buy a New Or a Used Saw?

It's not uncommon to see used stationary table saws for sale in the classified advertising section of local newspapers. If the price of a new saw seems a bit too rich for your blood, these "experienced" saws may appeal to you. Some woodworking professionals we know insist that if you can locate a well-made saw in good condition—even at the same price as some of the low-priced new saws—you're better off with the older one. This applies especially to contractors' models.

To check out the condition of an older saw, first make sure the top hasn't warped, and that neither the top nor the blade carriage assembly has cracked. Then, with the belt off, check for worn bearings by wobbling the blade and spinning it. If you don't spot any problems in the process, and the motor runs smoothly under load, you have found a good machine.

What About Those Taiwanese Imports?

You've all seen advertisements promoting table saws with "unusually low" price tags—often less than half the price of the machines they're imitating. Pretty tempting, aren't they?

Before you decide on one of these machines, we think you should know that the quality of product being imported varies drastically from one manufacturer to another. Some of the saws represent a good value; others don't.

If possible, you should inspect what you're buying before signing on the dotted line. You'll want to judge the quality of the castings and the trueness of the tabletop, and you should take a close look at the warranty offered with the product. There have been many reports of customers and retailers receiving damaged merchandise, so it's important to know in advance that the firm you're dealing with will stand behind the product.

How Much Table Saw Do You Need?

Manufacturers market four different sizes of table saws to the home woodworker—8″, 9″, 10″, and 12″. (These sizes refer to the largest-diameter blade the saw will accommodate.) The 8″ and 9″ saws take up less space and are lighter weight than the larger saws, which can work to your advantage if you suffer from limited workshop space or if you move the saw around frequently. On the minus side, 8″ and 9″ saws have smaller work surfaces, so balancing large materials while cutting becomes somewhat of a problem. And because they come with small-diameter blades, you're limited more in the depth of cut they will make.

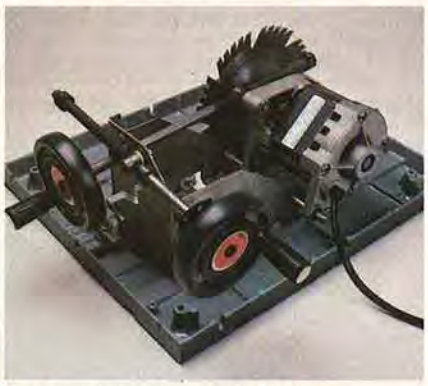
Buymanship Note: Though we certainly wouldn't discourage anyone from buying a 12″ table saw if they want, we feel that a 10″ model will do anything that needs doing in home woodworking situations.

Materials and Machining Make a Difference

Some table saws cost as little as $60; others, more than $2,000. So, you know there must be great differences in quality and options. What you must decide is how much quality you need—and can afford. When purchasing a table saw, you can tell a great deal about the machine simply by giving it a good looking over, keeping in mind the following information:

BLADE-CARRIAGE ASSEMBLIES

Inexpensive stamped steel



Heavier-duty stamped steel

Inexpensive cast iron

Heavier-duty cast iron

Table Construction. Of the five materials used—cast iron, cast aluminum, anodized cast aluminum, formed steel, and plastic—we think dollar for dollar, you're best off with a cast-iron saw table. This material has the advantage of being less prone to damage and warpage than the others, and generally is more accurately machined. Cast iron does rust easily, though.

Anodized (hardened) cast aluminum ranks as our second choice behind cast iron. A lightweight material, anodized cast aluminum won't rust and holds its shape much better than formed steel or plastic tops. Anodizing does wear off after a period of time, though, and when it does, the surface will oxodize and may become pitted.

Buymanship Note: When inspecting a cast-metal saw table, you can check for distortion by laying a level diagonally across the table. Good-quality products will have been machined true. Also, look at the table's surface for any evidence of pitting or hairline cracks—two telltale signs of an inferior casting. The smoother the surface, the better.

Saw Body Parts. Manufacturers use any of three materials for the housing beneath the saw table—formed (stamped) steel, aluminum, and plastic. All things considered, we think a heavy-gauge formed steel housing probably makes the best economic sense.

Blade Carriage Assemblies. More than any other part of a table saw, the blade carriage assembly separates the quality machines from their less-expensive competition (we show four different types at left). This mechanism largely determines how accurately the saw will cut. Because of the rigidity it imparts, cast iron gets our vote for the best material for this assembly. Following it would be cast aluminum and stamped steel.

The All-Important Rip Fence

Looking at the rip fence guide system on a table saw tells a lot about the saw's quality. Unfortunately, most rip fences don't measure up to most woodworkers' exacting requirements. In general, the more expensive the saw, the more accurate the fence will be. (See the examples shown above.) Those that slide along tubular guides at the front and back of the saw table usually perform best. Your second-best choice would be an angle-iron guide arrangement. Better saws will generally have a rip fence that locks onto the front and back guide rails.

RIP-FENCE GUIDES

Formed into tabletop

Flat iron

Angle-iron

Tubular

Choosing Between Two Power-Drive Mechanisms

Table saw motors deliver power to the saw blade in one of two ways. With all bench-top table saws and some stationary saws, the saw blade mounts directly to the motor arbor. These so-called "motorized" saws tend to be the least-expensive product in a manufacturer's line because they're less expensive to build.

The more-expensive belt-drive saws transfer the motor's power by means of a belt-and-pulley system. We prefer this type because it puts less stress on the motor, results in less play in the shaft, and is more accurate.

The Matter of Motors

If you have trouble understanding all the terminology used to describe the various table saw motor options, join the crowd. It confuses most everyone. To clarify things a bit, we'll discuss your options below.

Motor Type—Series or Induction

Series motors, the type that have replaceable carbon brushes, work well with portable power tools. But for tools designed to operate for longer periods of time under load, such as table saws, you're better off with an induction motor. Most stationary saws have them; only a few bench-top models do.

Motor Speed and Horsepower

You'll find that most of the available models operate at 3,450 rpm or higher. But horsepower varies significantly, as you can see in the chart on the following page.

(Text continued on page 82)

(See chart on next page)

TABLE SAW COMPARISON/SPECIFICATION CHART

Brand	Model	Blade Size	Arbor Size	Bench Top	Stationary	Table Type	Table Size (W×D)	Weight	Rip Capacity	Fence Guide	Cut Depth	Drive Mech.	Suggested Retail	Motor Style	Motor Type	Motor AMPS	Motor Continuous HP	Motor Bearings
AMT	21645B	8"	1/2"	X		CI	10×13	23	5 1/2"	FI	2 1/4"	B	76.00	H	Recommends 1 HP			B
AMT	21645	8"	1/2"	X		CI	10×13	23	5 1/2"	FI	2 1/4"	B	63.50	H	Recommends 1 HP			S
AMT	21655B	8"	1/2"	X		CI	10×13	22	5 1/2"	FI	2 1/4"	B	65.00	H	Recommends 1 HP			B
AMT	21655	8"	1/2"	X		CI	10×13	22	5 1/2"	FI	2 1/4"	B	62.50	H	Recommends 1 HP			S
Black & Decker	9419	8"	1/2"	X		P	26 1/2×15 5/16	32	10"	FI	1 3/4"	D	109.99	B	I	7.5	1	B
Black & Decker	9429	8"	1/2"	X		P	26 1/2×15 5/16	32	10"	FI	1 3/4"	D	159.99	B	I	9	1 1/2	B
Delta Contractor	34-410	10"	5/8"		X	CI	40×27	223	25"	T	3 1/8"	B	803.00	H	Recommends 1 1/2 HP			B
Delta Contractor	34-621	9"	5/8"		X	CI	22×30	120	24"	T	2 3/4"	B	530.00	H	Recommends 1 HP			B
Delta Super 10	34-710	10"	5/8"		X	CI	27×37	Not Listed	24"	T	2 9/16"	D	597.00	B	I	Not Listed	1	B/S
Delta Homecraft	34-695	10"	5/8"		X	CA	22×42	119	24"	T	3 1/4"	D	349.00	B	I	13	Not Listed	B/S
Delta Homecraft	34-580	9"	5/8"		X	CA	22×32	101	15"	FI	2"	D	314.00	B	I	13	Not Listed	B/S
Delta Motorized	31-205	8"	1/2"	X		CA	16×26	40	10 1/4"	B	2 1/16"	D	206.00	B	I	9.5	Not Listed	B/S
Dremel	580	4"	1/2"	X		CF		15		B	1"	D	132.95	B	S	2.2	Not Listed	S
INCA	250	10"	3/4"		X	CAA	20 5/8×28 3/4	66	23"	AI	3 5/32"	B	798.00	H	Recommends 1 HP			B
Makita	2708	8 1/4"	5/8"	X		CA	18 1/2×26	37 1/8	12"	B	2 1/2"	D	336.00	B	S	12	2	B
Sears Electronic	29065N	10"	5/8"		X	CI	40×27	218	24"	AI	3 3/8"	B	699.99	H	CI	13.2	1	S/B
Sears	29802N	10"	5/8"		X	CI	40×27	257	24"	AI	3 3/8"	B	449.99	H	CI	13.2	1	S/B
Sears Motorized	29805N	10"	5/8"		X	CA	40×27	130	24"	AI	2 1/2"	D	389.99	B	CI	Not Listed	1	SB
Sears Motorized	24272N	9"	5/8"		X	CA	37×20	110	24"	AI	2"	D	289.99	B	CI	Not Listed	3/4	S/B
Sears Motorized	22161C	8"	1/2"	X		CA	30×17	47	12 3/4"	FI	1 3/4"	D	144.99	B	I	Not Listed	1/2	S/B
Sears	2412C	8"	1/2"	X		CI	10 1/2×13	26	5"	FI	2 1/4"	B	84.99	H	Recommends 1 HP			B
Shopcraft	T6780	10"	5/8"	X		CA	17×26	40	12"	B	3"	D	159.99	B	S	10	1 3/4	B
Skil	3102C	8 1/4"	1/2"	X		CA	16×27	37	12"	B	2 1/16"	D	189.99	B	S	10	2	S/B
Toolkraft	4100	10"	5/8"		X	F	42×20	75	24	AI	3 1/8"	B	359.95	B	S	11	2	B
Toolkraft	4107	10"	5/8"		X	F	47×20	80	24	AI	3 1/8"	B	399.95	B	S	11.5	2 1/4	B
Toolkraft	4116	10"	5/8"		X	CI	50×20	102	24	AI	3 1/4"	B	499.95	B	S	11.5	2 1/8	B
Toolkraft	4101	10"	5/8"		X	CI	45×27	130	24	AI	3 1/4"	B	579.95	B	S	11.5	2 1/4	B
Toolkraft	4122	10"	5/8"		X	CI	50×27	140	24	AI	3 5/8"	B	629.95	B	S	12.5	2 1/2	B
Toolkraft Tradesman	4125	10"	5/8"		X	CI	35×20	120	24	AI	2 1/4"	D	599.95	B	CI	10.5	1 1/8	B
Valuecraft	8000	10"	5/8"		X	CI	40 1/2×27 1/16	230	24	T	3 1/8"	B	599.99	H	CI	12	1	B
Valuecraft	8010	10"	5/8"	X		CA	26×17 1/4	40	12	B	3	D	169.99	B	S	10	1 1/2	B

Tabletop: CI — Cast Iron; CA — Cast Aluminum; CAA — Cast Anodized Aluminum; F — Ferrolon® Plastic; FS — Formed Steel; P — Plastic; CF — Cast Fiberglass

Motor Type: CI — Capacitor-Start Induction; S — Series; I — Induction

Motor Style: B — Built-In; H — Hang-Behind

Drive Mechanism: D — Direct; B — Belt

Fence Guides: B — Built-In; T — Tubular; AI — Angle Iron; FI — Flat Iron

Bearings: S — Sleeve; B — Ball

SHAKER-STYLE CUPBOARD

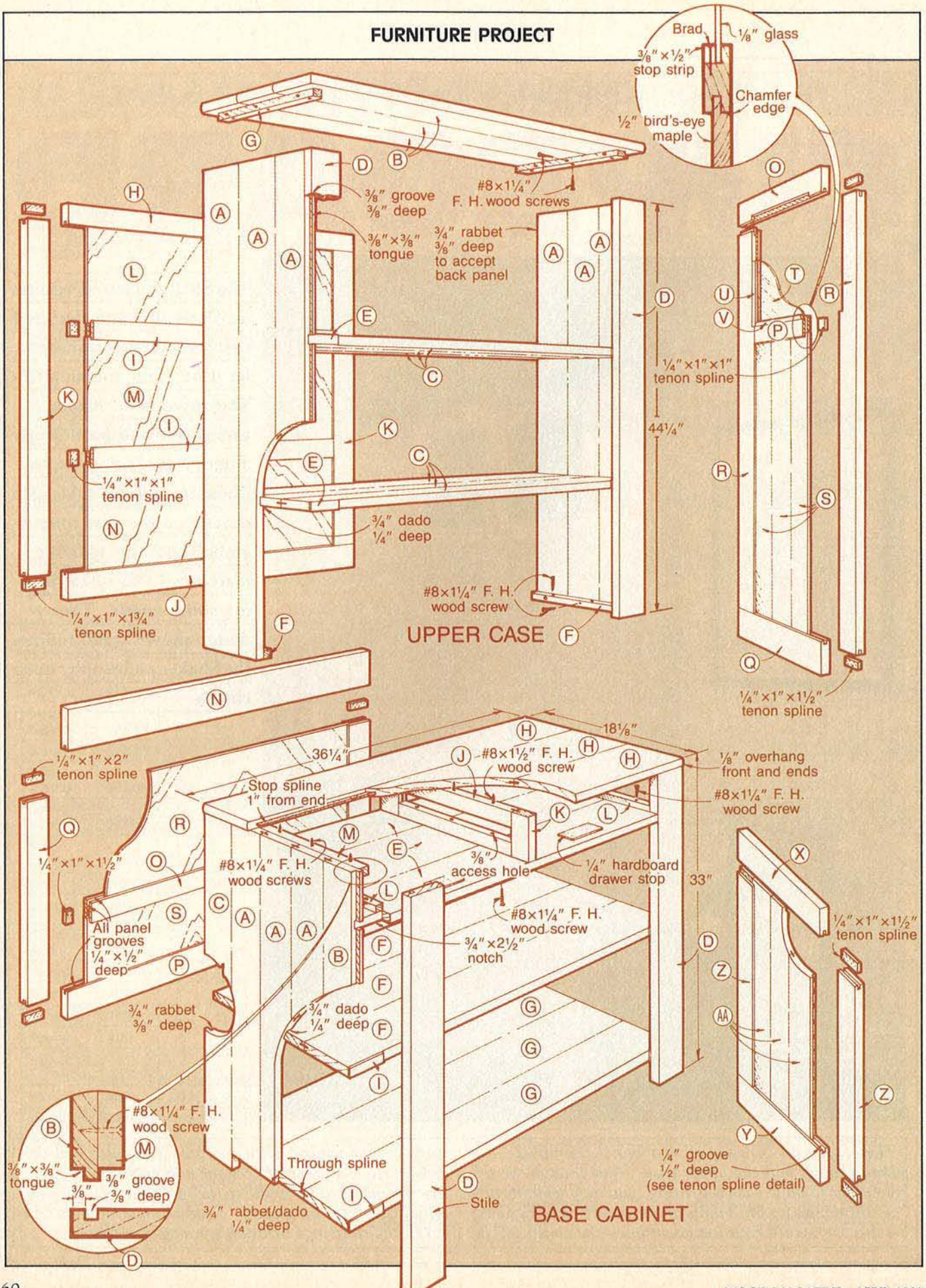
The Shakers viewed veneers as "deceitful", and declared that "whatever is fashioned, let it be plain and simple." They used solid maple extensively and particularly admired bird's-eye maple. These resourceful folks also developed the first tongue-and-groove and splining machines to facilitate joining solid woods. The design shown at left follows the Shaker philosophy quite closely.

Print this article

Photographs: Bob Calmer; William Hopkins Associates
Illustrations: Bill Zaun, Herb Dixon

This cupboard consists of two basic assemblies—the base cabinet and the upper case. And though we tell you how to build each separately, you may want to glue up the panels for both units at the same time. By doing it this way, you'll have less downtime—the panels will be ready for machining when you are. Note also that the ends, shelves, and top of both the base cabinet and upper case are made up for width in the same way, which simplifies construction greatly. Read the instructions and study the drawings before beginning construction.

Continued


Brad
1/8" glass
3/8" × 1/2" stop strip
Chamfer edge
1/2" bird's-eye maple
#8×1 1/4" F. H. wood screws
3/8" groove 3/8" deep
3/8" × 3/8" tongue
3/4" rabbet 3/8" deep to accept back panel
1/4" × 1" × 1" tenon spline
3/4" dado 1/4" deep
#8×1 1/4" F. H. wood screw
1/4" × 1" × 1 3/4" tenon spline
UPPER CASE
44 1/4"
1/4" × 1" × 1" tenon spline
1/4" × 1" × 1 1/2" tenon spline
18 1/8"
1/8" overhang front and ends
#8×1 1/2" F. H. wood screw
#8×1 1/4" F. H. wood screw
36 1/4"
1/4" × 1" × 2" tenon spline
Stop spline 1" from end
1/4" × 1" × 1 1/2"
#8×1 1/4" F. H. wood screws
3/8" access hole
1/4" hardboard drawer stop
33"
All panel grooves 1/4" × 1/2" deep
3/4" × 2 1/2" notch
#8×1 1/4" F. H. wood screw
1/4" × 1" × 1 1/2" tenon spline
3/4" rabbet 3/8" deep
3/4" dado 1/4" deep
#8×1 1/4" F. H. wood screw
3/8" × 3/8" tongue
3/8" groove 3/8" deep
Through spline
3/4" rabbet/dado 1/4" deep
Stile
1/4" groove 1/2" deep (see tenon spline detail)
BASE CABINET

Bill of Materials

Part	Finished Size* T	W	L	Material	Qty.
BASE CABINET — The Carcass					
A*	¾"	4"	30¾"	maple	6
B*	¾"	2⅝"	32¼"	maple	2
C*	¾"	3"	32¼"	maple	2
D*	¾"	3"	32¼"	maple	2
E*	¾"	5¾"	35"	maple	3
F*	¾"	5⅜"	35"	maple	3
G*	¾"	5⅜"	35"	maple	3
H*	¾"	6 1/32"	36¼"	maple	3
I	⅛"	¾"	2¼"	maple	4
J	¾"	1½"	14¼"	maple	2
K*	¾"	1½"	4 1/16"	maple	2
L	¾"	¾"	16½"	maple	2
M	¾"	¾"	16½"	maple	2
The Cabinet Back					
N	¾"	4¾"	35¼"	maple	1
O	¾"	2"	30¾"	maple	1
P	¾"	3"	35¼"	maple	1
Q	¾"	2¼"	23"	maple	2
R	¼"	31¾"	12"	maple plywood	1
S	¼"	31¾"	11"	maple plywood	1
The Drawers					
T	¾"	4"	14½"	maple	2
U	½"	4"	16¼"	maple	4
V	½"	3¼"	14"	maple	2
W	¼"	14"	14"	maple plywood	2
The Doors					
X	¾"	2"	14 15/16"	maple	2
Y	¾"	3"	14 15/16"	maple	2
Z	¾"	2"	20⅞"	maple	4
AA	½"	3 15/16"	21⅞"	bird's-eye maple	6

*Some parts are cut larger initially, then trimmed to finished size. Please read instructions before cutting.

Supplies: #8×1½" flathead wood screws, #8×1¼" flathead wood screws, ¼" hardboard for splines, 4—brass door pulls, 4—2" long (3/16" knuckle) brass butt hinges, 2 door catches, polyurethane

Cutting diagram

14 pieces—¾"×9¼"×96" MAPLE

2 pieces—½"×9¼"×72" MAPLE

2 pieces—¼"×48"×48" MAPLE PLYWOOD

Bill of Materials

Part	Finished Size* T	W	L	Material	Qty.
UPPER CASE — The Carcass					
A*	¾"	3⅞"	44¼"	maple	6
B*	¾"	4 1/32"	36¼"	maple	3
C*	¾"	3 7/16"	35"	maple	6
D	¾"	3"	44¼"	maple	2
E	⅛"	¾"	2¼"	maple	4
F	¾"	¾"	10½"	maple	2
G	¾"	¾"	10½"	maple	2
The Cabinet Back					
H	¾"	2"	35¼"	maple	1
I	¾"	2"	30¾"	maple	2
J	¾"	3"	35¼"	maple	1
K	¾"	2¼"	39¼"	maple	2
L	¼"	31¾"	11⅞"	maple plywood	1
M	¼"	31¾"	14 1/16"	maple plywood	1
N	¼"	31¾"	12 5/16"	maple plywood	1
The Doors					
O	¾"	2"	14 15/16"	maple	2
P	¾"	2"	10 15/16"	maple	2
Q	¾"	3"	14 15/16"	maple	2
R	¾"	2"	39⅛"	maple	4
S	½"	3 15/16"	26⅛"	bird's-eye maple	6
T	⅛"	11⅞"	12⅞"	double-strength glass	2
U	⅜"	½"	13"	maple	2
V	⅜"	½"	10 15/16"	maple	2

*Some parts are cut larger initially, then trimmed to finished size. Please read instructions before cutting.

Supplies: #8×1¼" flathead wood screws, 2—brass door pulls, 6—2" long (3/16" knuckle) brass butt hinges, 2 door catches, brads, polyurethane

THE BASE CABINET

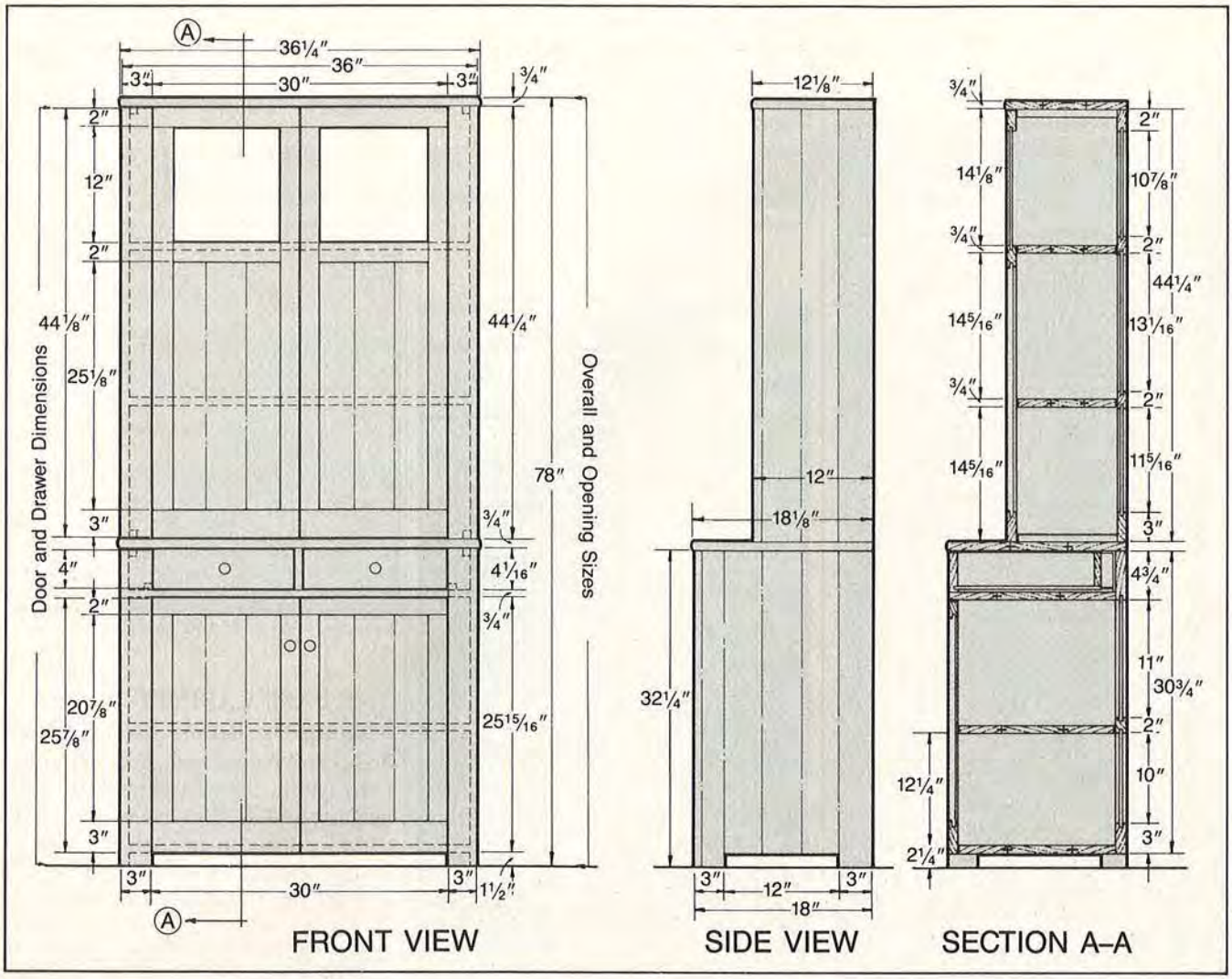
Making Up Panels for Width

1 Rip end-panel parts A, B, C, and D to width, then crosscut them to length plus 1". Rip and crosscut the parts for the drawer shelf (E), the middle shelf (F), the bottom (G), and the top (H) at this time, too.

Note: Before cutting the grooves for the splines, lay out the panel pieces on a flat surface, alternate the end grain configuration, and match the pieces together for a smooth transition of the grain from one piece to the next. Once you have laid out a panel so it looks the best, draw a large triangle on the face of the panel. You will use this marking later for positioning the pieces when clamping up the panels.

2 Using a router fitted with a splining bit (we did our splining with the aid of our router table—see page 32 for how to build the table), cut ¼" grooves ½" deep the full length to A and to within 2" of the bottom end of parts B and C. (Remember to run all the boards through the router facedown. If you do this, you won't have to worry if the grooves aren't exactly

Continued



centered along the boards' edge.) Also, cut the grooves the full length of parts E, F, and G. And, cut the same-size grooves in the boards that will make up the top (H), but be sure to stop 1" from each end as shown in the photo at left.

Cutting Stopped Groove for Spline

3 Cut ⅞"-wide splines from ¼" hardboard for all the joints. You will need to contour sand the stopped-spline ends to fit in the stopped grooves. Cut the filler blocks (I) to size. When installed, the filler blocks prevent the doors from slamming against the shelf.

4 Spread glue in the grooves of the A parts, on the splines, and on all mating surfaces, clamp the parts together to form the center portion of the cabinet ends. (You'll want to make sure your reference marks align.) Later, trim the bottom end square, and sand both panels smooth.

5 Join parts B and C in the same manner to complete the end panels. (The bottom end of B and C should extend 1½" beyond the bottom of A.) After the glue has had a chance to dry, remove the clamps and excess glue, then cut the panels to their finished length.

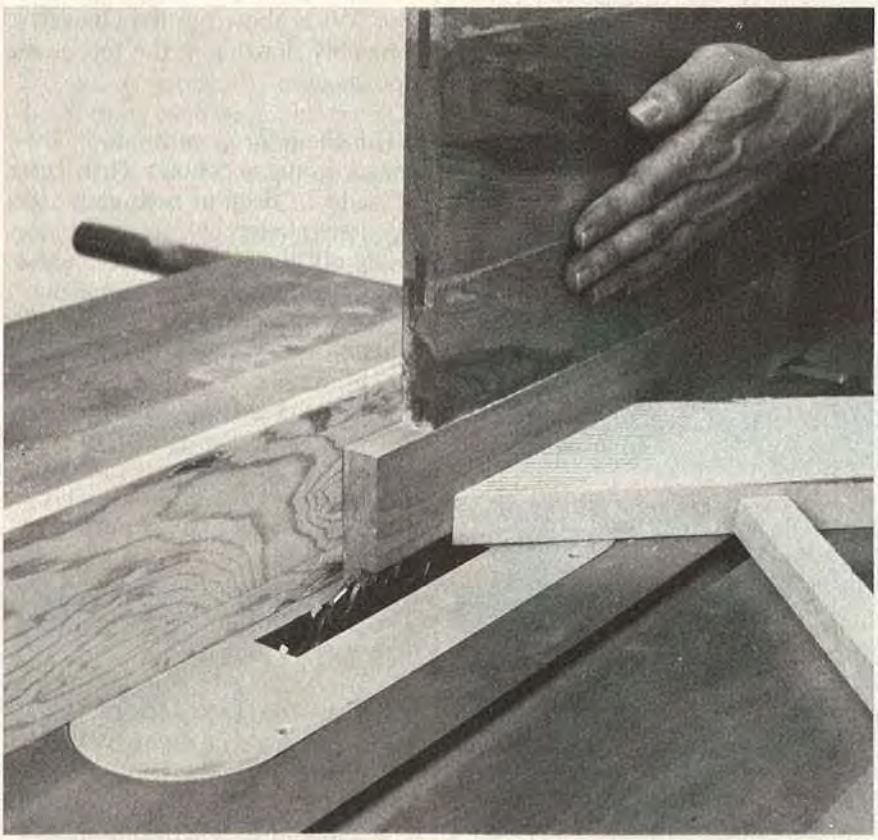
6 Cut ¾" dadoes ¼" deep in the cabinet ends to house the shelves (E, F) and the cabinet bottom (G). Also cut a ¾" rabbet ⅜" deep along the back inside edge of the end panels.

7 Measuring over ⅜" from the outside edge of each stile (D), cut a ⅜" groove ⅜" deep the length of both (we used a table saw fitted with a rip fence and a dado blade to make our grooves—see the photo at the top of the next page).

Cutting the Groove in the Stile

Safety note: Whenever possible, use safety guards. For photographic clarity, we have removed the guards for this operation.

Now, cut a ⅜" rabbet ⅜" deep along the outside edge of B as shown in the Rabbet Cutting photo below. (See the Base Cabinet detail drawing for how B and D fit together.)



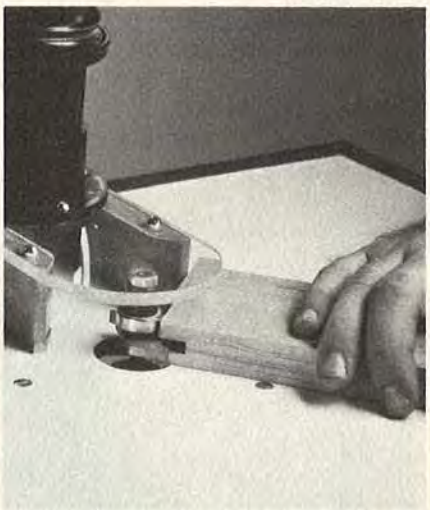
Cutting the Rabbet in Panel Edge

8 Trim the stiles (D) to their finished length, then glue and clamp them to the front edge of each end panel, being sure to keep them at a 90° angle to each other.

9 Glue and clamp together the shelves (E, F) and the cabinet bottom (G). After the glue has dried, remove the clamps and excess glue. Trim the panels to finished length, and sand all the panels smooth. Cut a ¾"×2½" notch in the front of E to accept the stiles (D).

Making the Drawer Divider and Guides

1 Cut the drawer divider rails (J) to size. To fashion the drawer divider stiles (K), rip a 12" maple board to 4 1/16". Then, cut a ¼" groove ½" deep along both ends of the board as shown in the photo at right. Now, rip the two stiles to 1½". Cut a like-sized groove along each end of both rails. When cutting an end-grain groove, it is important to first rest the workpiece against a stationary point. (We used the corner of the guard—see the photo below.) Then, swing the board toward the center of the pilot bearing to start the cut. This method holds the workpiece steady and helps to prevent kickback.



Cutting the End-Spline Groove

2 Clamp the rails (J) together edge to edge with the ends flush. Drill three equidistant 5/32" pilot holes through both pieces, then drill a ⅜" hole through the bottom rail and ½" into the top K. The ⅜" hole will be used later to allow access for your screwdriver.

3 Remove the clamps, then glue the splined divider together.

Assembling the Base Cabinet

1 Dry-clamp the end panels, shelves, and bottom to check for a good fit. (The front of the top shelf (E) should be flush with the front of D; there should be a ⅛" gap between both the lower shelf (F) and the bottom (G) and the back side of D. The back edge of E, F, and G should fall ¾" short of the back edge of the end panels.)

2 After making any necessary adjustments, glue and clamp the cabinet together. Also, glue the filler blocks (I) between the front of the shelves (F, G) and stiles (D).

Continued

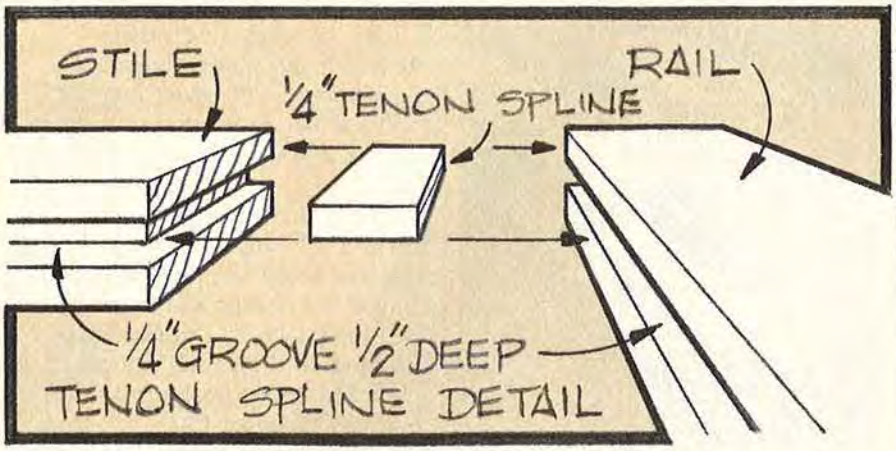
3 Cut the drawer guides (L) and the cleats (M) to size. Then, glue and screw the drawer guides flush with the inside edges of the stiles (D).

4 Screw the cleats to the bottom side of the top to fit between the end panels.

5 Screw the divider to the center of the top, as shown in the photo below. (Make sure the divider's back edge is ¾" in from the back edge of the top.)

Attach the Drawer Divider to the Top

Position the top and divider onto the base and secure it there by driving screws through the cleats and on into the end panels. Screw the top shelf to the divider as shown in the photo below. (You'll want to drill pilot holes before driving the screws.)

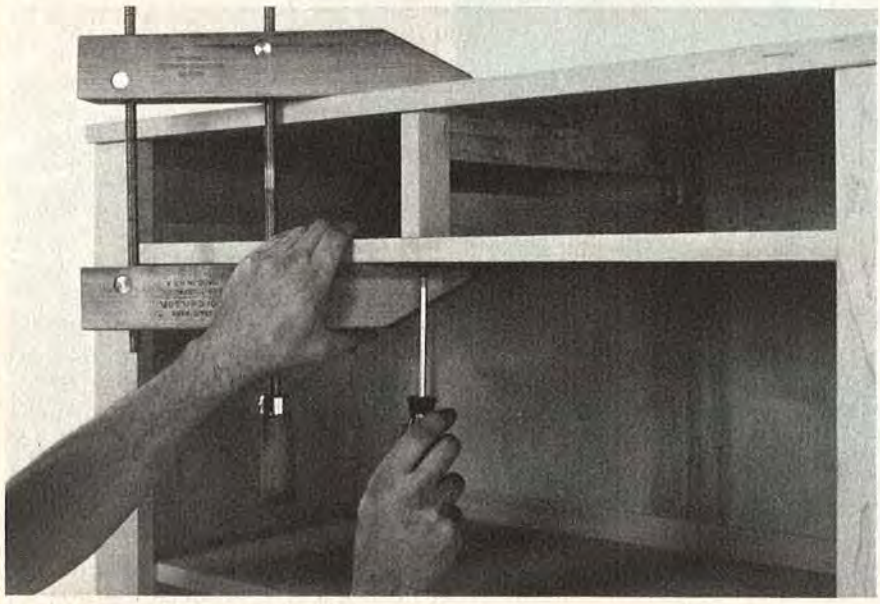


Building the Base Cabinet Back

1 Cut the rails (N, O, P), stiles (Q), and panels (R, S) to size.

2 Cut ¼" grooves ½" deep along the bottom edge of N, both edges and ends of O, top edge of P, and inside edge and both ends of Q. Cut ¼" maple tenon splines to fit between the stiles and rails as shown in the Tenon Spline Detail above. Dry-clamp the parts together to check the fit.

3 Glue and clamp the panel together checking for square. Remove the glue after it has formed a tough skin.



Screwing the Top Shelf to the Drawer Divider

4 Check the fit of the panel in the back of the cabinet and trim if necessary. Glue and clamp the back to the cabinet.

Building the Drawers

1 Rip and crosscut the drawer parts (T, U, V, W) to size. Cut a ½" dado in the drawer sides (U) that is ¼" deep and 2" from the end of the back edge of each. Now, cut a ¼" groove ¼" deep and ½" from the bottom along the bottom edge of the sides to house the drawer bottom (W) as shown in the Drawer Assembly drawing at the top of the next page.

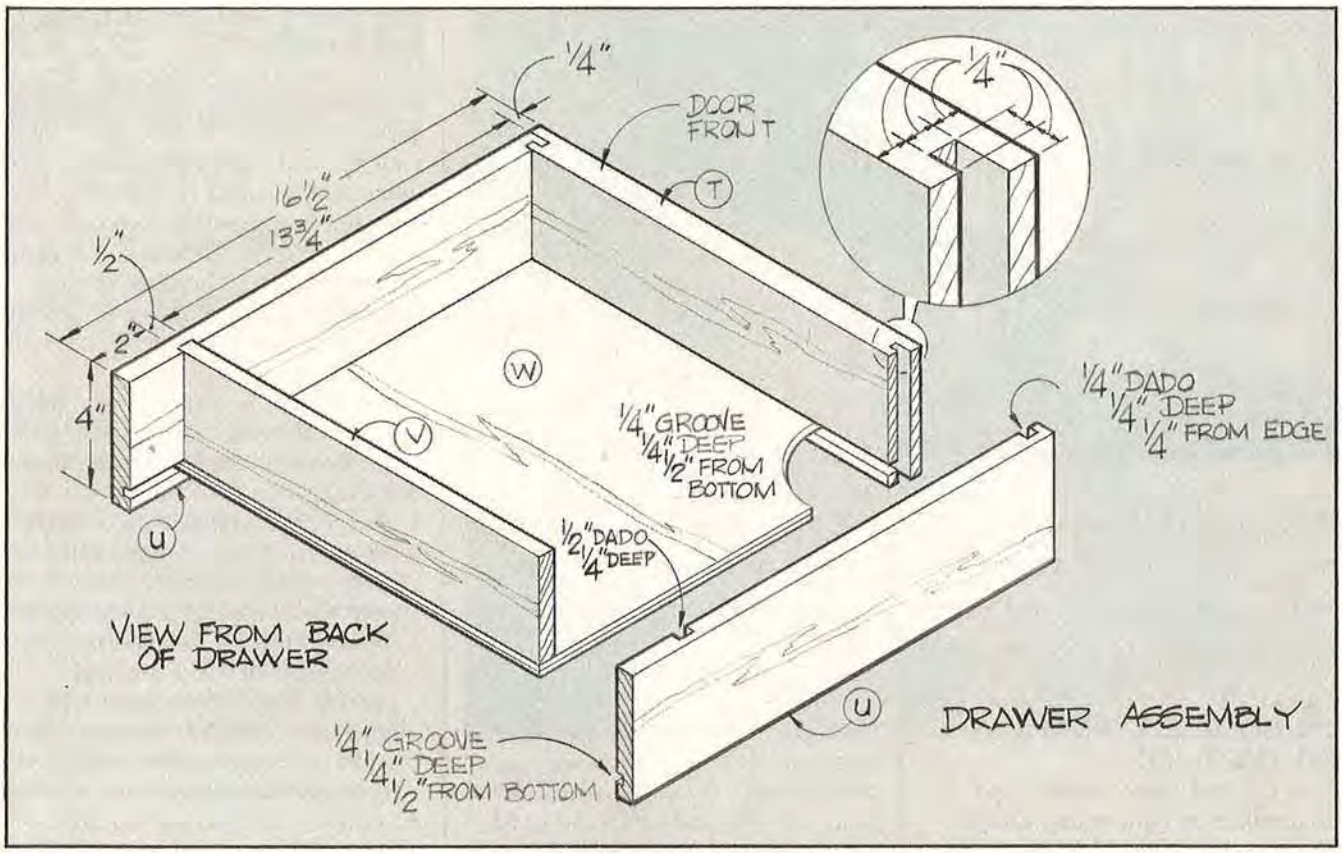
2 Cut the joint at each end of the drawer fronts as follows: First, cut a ¼" dado ½" deep in both ends. (See the drawer assembly detail for how to lay out the joint.) Next, make a cut ¼" in from the end to cut one of the tongues shorter than the other.

3 Dry-clamp the drawers together to check for proper fit; adjust, if necessary. Sand all parts smooth, then glue and clamp the drawers together.

4 Cut and install ⅛" drawer stops ¾" back from the front edge of the drawer shelf (E).

Building the Two Doors

1 Rip and crosscut the rails (X, Y) and stiles (Z) to size. Rip the parts for the bird's-eye maple panels (AA) to width and to length plus 1". Glue and clamp the panels (AA)



together, being sure to keep the pieces flat.

2 Cut a ¼" groove ½" deep along the bottom edge of X, the top edge of Y, and the inside edges and both ends of Z. Cut ¼" maple spline tenons for the joints. Cut the panels AA to their finished length and sand smooth. Cut a 3/16" rabbet ¼" deep on all four face edges of the panel AA to fit into the grooved stiles and rails as shown in the door detail. Dry-clamp the doors together to check the fit. Glue, spline, and clamp the door parts together.

THE UPPER CASE

Making Up the Panels for Width

1 Rip and crosscut the pieces for the upper-case cabinet ends (A), top (B), and two shelves (C). Construct the panels, using the same procedures as used in constructing the panels for the base cabinet.

2 Cut stiles (D), filler blocks (E), and cleats (F, G) to size. Cut a groove in the stiles, a rabbet along the front edge of each side panel, a rabbet along the back inside edge of each panel, and dadoes to accept the shelves. Then, glue and clamp the pieces together.

3 Drill pilot holes through F and G, then attach the bottom cleats (F) to the side panels and the upper cleats (G) to the top.

Building the Back

1 Rip then crosscut the rails (H, I, J), the stiles (K), and the panels (L, M, N) to size.

2 Cut the grooves in the stiles and rails. Dry-clamp the parts together to check the fit. Glue and clamp the panel assembly together. Remove the glue after it has formed a tough skin.

3 Glue and clamp the cabinet back into the rabbet.

Building the Doors

1 Rip then crosscut the door rails (O, P, Q) and stiles (R) to size, and the panels (S) to width and to length, plus 1".

2 Glue and clamp the panels together. Cut the grooves in the stiles and rails. Dry-clamp the door together to check the fit.

3 Glue and clamp the door assembly together. Set up the fence on your router table with a straight bit, and rabbet the back side of the door to house the glass. Check the measurement of the glass insert (T) and have it cut to size. Cut pieces U and V to hold the glass in place.

FINISHING THE CUPBOARD

1 Chisel a 1/16" deep notch in the doors to house the butt hinges. Drill pilot holes for the hinge screws.

2 Finish-sand all the cupboard parts and varnish them (we like the natural appearance of the maple and so we did not stain it).

3 Attach the door and drawer pulls, the hinges, the door catches, and install the glass.

4 Screw the upper case to the base. ■

make that old finish look like new again

Stripping an old finish isn't a pleasant task, so why do it if you can avoid it? Fortunately, the right materials, some know-how, and a little ingenuity will often save that "doomed" piece you've been meaning to work on.

Print this article

A GOOD CLEANING MAY DO THE TRICK

Dirt, oil, and wax combine and accumulate to darken and dull finishes on wood furniture. Even the rejuvenation of a lack-luster, near-antique might be as simple as cleaning with an appropriate cleanser. Murphy's Oil Soap—one commonly available, old-time favorite—cleans and conditions at the same time.

Varnish, recognizable by its tiny surface cracks, cleans well with a 50:50 mix of turpentine and tung oil (or boiled linseed oil.) Rub the dirty surface with a cloth saturated in the mixture.

Some finishes will be so heavily coated with dirt and grime that you'll have to use #0000 steel wool with the cleanser. Scrub lightly with the grain to avoid scratches.

HOW TO REMOVE SURFACE BLEMISHES

All furniture picks up minor surface scratches during normal use. Moisture, too, shows up as surface cloudiness or rings left by drinking glasses. The following tips will help you cope with these problems.

Abrasions on surface-finished items. Combat tiny scratches with the help of finely ground abrasive powders. Pumice, a powdered volcanic ash, has a medium grit. Mixed to a paste with lemon oil, it polishes well. Working with the grain, rub the paste into the finish with a felt pad until the scratches disappear. Wipe off the pumice paste with a clean cloth. For a higher gloss, follow the same procedure using rottenstone, a much finer abrasive powder of ground slate.

Abrasions on oil-finished wood. On pieces finished with penetrating oil (Danish, tung, or linseed), bad spots are easy to repair. Just rub the marred area with #0000 steel wool, then apply a new coat of the appropriate oil to the entire surface.

Stubborn small scratches. Resistance to the pumice and rottenstone treatment calls for a heavy remedy. Step up to silicon-carbide (wet/dry) sandpaper. To use it, pour a small amount of lemon oil on the surface, then sand lightly with the grain until the blemish disappears. Start with finer grit 600 and progress down to heavier grit 320 as the blemish's stubbornness dictates.

Moisture-caused blemishes. Wet glass rings and surface cloudiness usually surrender to the pumice-and-oil paste treatment mentioned above if the moisture hasn't penetrated too deeply. If spots resist, the only solution is sanding and refinishing.

HOW TO CAMOUFLAGE DEEP SCRATCHES

When a scratch digs through the finish and damages the wood itself, abrasive remedies won't work. With patience and considerable practice, you could learn to fill scratches with hot lacquer sticks or cover them by spot refinishing, both permanent repairs. There are some less-permanent (and easier to accomplish) techniques, however, that will hide the damage.

- Shoe polish in a matching shade is a quick trick. Use a Q-tip or a toothpick to apply, then bring to a shine with a soft cloth.
- Defects that actually need filling are easy to conceal with putty sticks. They contain a waxy putty and come in a wide range of wood tones. Rub the tip of the stick (much like a crayon) back and forth over the scratch. Since they remain soft, don't use them on surfaces such as tabletops and chair arms.
- Scratches on hard-use surfaces should be stained to match, then filled with spot-finishing lacquer on an artist's brush. Polish the filled scratch with pumice and rottenstone.

CARING FOR FINE WOOD FURNITURE

Once the finish is refurbished, light maintenance keeps it in shape.

Avoid wax buildup. Dust furniture weekly with lemon oil sprinkled on a soft cloth.

Polish only when necessary. Spray-on and liquid polishes should be applied only when furniture actually needs polishing, not for weekly dusting.

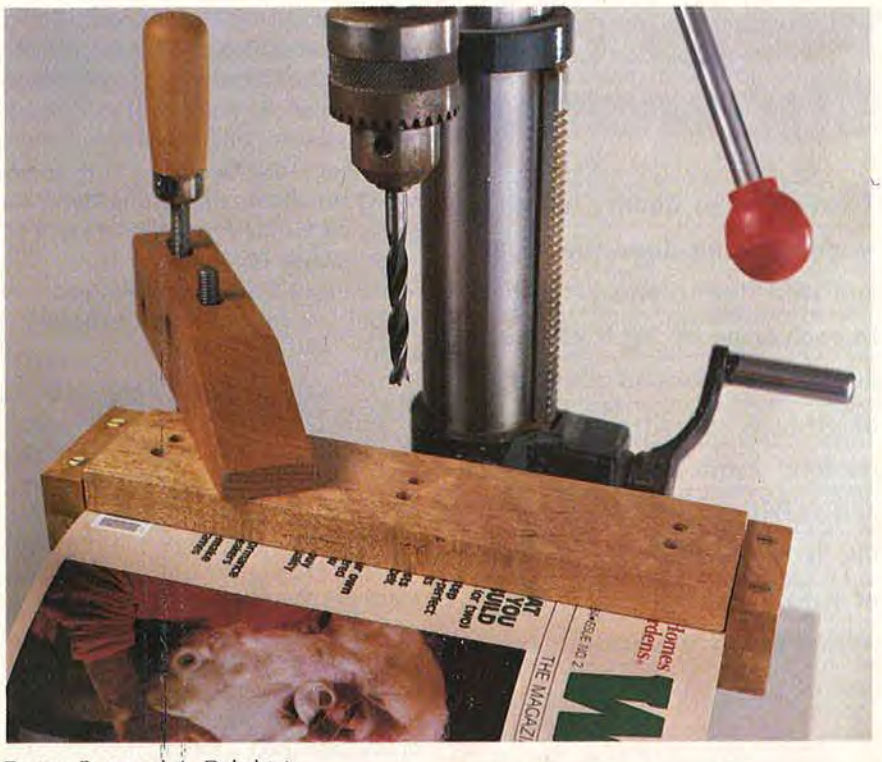
Use paste wax only twice a year. Paste wax provides long-lasting sheen and a thicker protective barrier than spray-on and liquid polishes, but builds up fast. Therefore, apply it only every six months. When you note a paste wax-polished wood finish getting tacky to the touch, dull, and attracting fingerprints, don't put on more; there's too much already. Clean off the buildup with the oil soap or 50:50 mix of tung oil and turpentine mentioned earlier. ■

the WOOD magazine 3-ring binder drilling jig

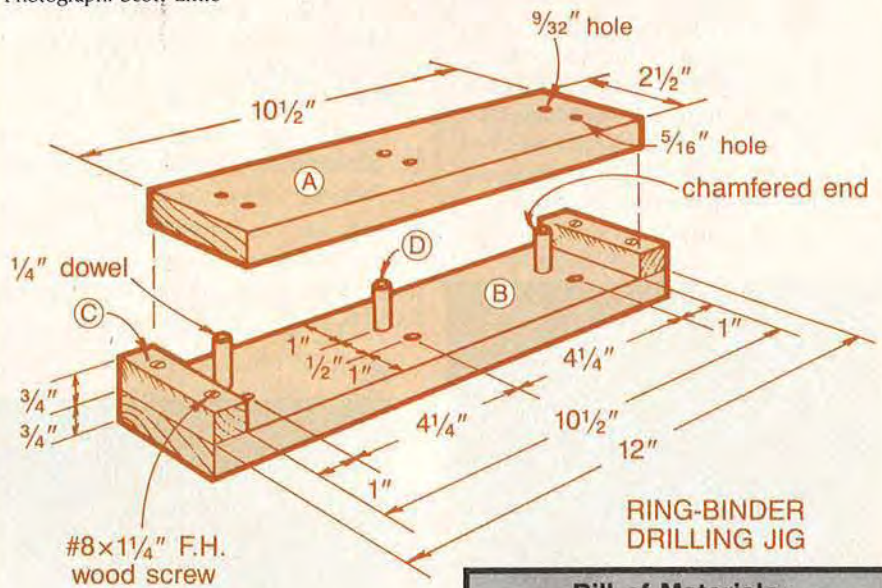
Print this article

WOOD readers constantly amaze us with their ingenuity! This simple idea for drilling holes through your issues of WOOD magazine, enabling you to catalog them in a three-ring binder, came from Ray Dobelstein, of Flemington, New Jersey. It came just in time, too, with the heavy reader interest in a way to keep their back issues of WOOD organized. Next issue we'll show you how to build a wooden three-ring binder.

1 Rip then crosscut the drill guide (A), base (B), and cleats (C) to size.
2 Clamp one cleat to each end of the base. Then, glue and screw the cleats to the base. (We used a drill/countersink bit to pre-bore the screw holes.)
3 Mark the location of the drill guide holes and those for the dowel pins (D) on part A. (See the drawing at right for correct positioning.) Now, clamp parts A to the B–C assembly and drill the holes through both part A and the base. (You'll want to place a piece of scrap wood beneath the base when drilling to prevent it from chipping.)
4 Cut the walnut pins (D) to length and chamfer one end of each. Glue the pins into the ¼" holes in the base. Using a 9/32" bit, enlarge the ¼" holes in A for an easier fit of the pins through the guide.
5 Test the fit by sliding the guide onto the dowels; sand if necessary.
6 Finish-sand all the parts and apply polyurethane or lacquer finish. (When applying the finish, try to keep it out of the drilled holes.) Apply wax to the pins for a smoother fit into the guide. ■



Design: Raymond A. Dobelstein
Photograph: Scott Little



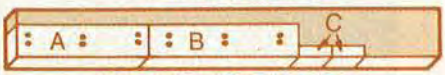
RING-BINDER DRILLING JIG

Bill of Materials

Part	Finished Size T	W	L	Material	Qty.
A	¾"	2½"	10½"	maple	1
B	¾"	2½"	12"	maple	1
C	¾"	¾"	2½"	maple	2
D	¼" dia.		1½"	walnut dowel	3

Supplies: 4—#8×1¼" flathead wood screws, polyurethane or lacquer finish, wax

Cutting diagram



¾"×3½"×36" MAPLE

Project Showcase

There's lots of quality woodworking being done these days, and we'd like to show it off. In each issue of WOOD, we devote this space to a display of projects submitted by our readers. From boxes to bowls, and carvings to cabinets, we'd like to see them if they're made of wood. To submit projects, follow the instructions at the end of this article.

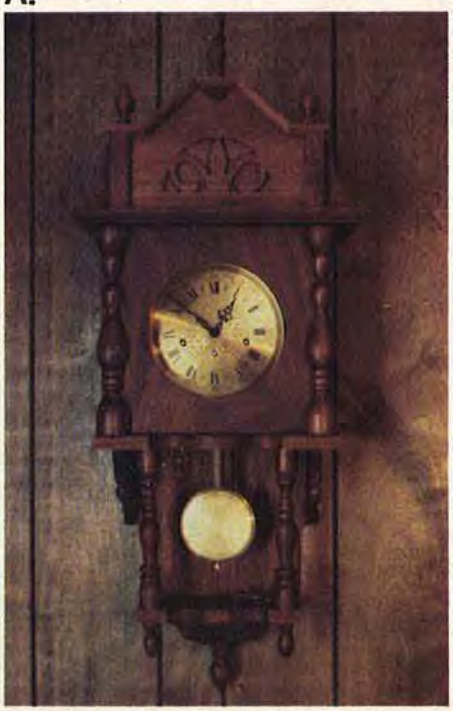
A. Grandfather's Clock Works

For a high school 4-H project, Darrel Schwilling, of Casper, Wyoming, gave new life to some old clock works his grandfather had bought at auction. He fashioned a handsome walnut clock case that features ornate half-turnings flanking the face as well as other turned ornamentation. With an eye to the past, his case design blends perfectly with the clock face of yesteryear.

To make the half-turnings, Darrel glued newspaper between two pieces of stock before turning them, which made separating the twins fairly easy. He finished the clock with Danish oil.

We'll bet Darrel's grandfather would like his clock works back now!

A.



B. Curved Stretcher Table

A beautifully curved stretcher sets this red oak writing table apart from the crowd, as shown by this photo William Hart sent to us from Allentown, Pennsylvania. He steam-bent a six-layer lamination and splinted it to the straight stretchers to create an unusually interesting effect.

In order to display continuous grain, Bill used a single piece of red oak for the front apron and drawer fronts. Keeping elegance simple, he finished his 56"×26"×29"-high table with three coats of Mohawk Natural Danish Oil. ■

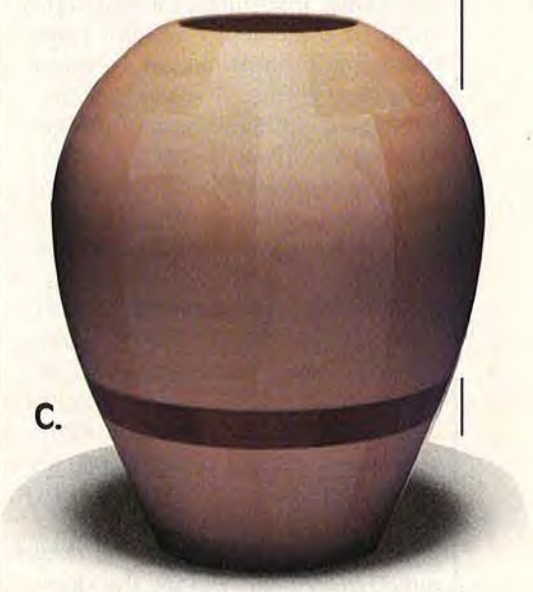
C. Blue-Printed and Segmented Vessel

Laying out this bubinga-striped, yellow poplar vessel to actual size on graph paper gave Steve Levine, from Kendall Park, New Jersey, the opportunity to plan each segment's size and wood grain appearance, as well as its angle, before construction began.

Each of the vessel's four rings have ten segments and were added one at a time to the base, then individually turned in a step-by-step building process. Steve deliberately offset the segment seams for strength and design interest. Sanding with progressions of 60- to 280-grit paper, then 15 coats of Deft and a final rub with #0000 steel wool gave his 16"-high×10"-diameter vessel its mirrorlike finish.

Steve, we think the result was

C.



B.

worth all the effort. Keep up the good work.

D. Euro-Style Inlay Jewelry

In his native Czechoslovakia, Josef Dolejs spent 18 years crafting hardwood veneers into fashionable inlaid jewelry. Josef now lives in Albuquerque, New Mexico, but he hasn't lost his interest or his touch, as his matched earrings, pendant, and bracelet prove.

Made of walnut, maple, and mahogany, the jewelry reflects both his European heritage and the influence of the American Southwest. To make it, Josef cuts small pieces of contrasting woods, then glues them into place on the incised background wood. For the bracelet, he laid up four veneer layers around a wrist form, using the glue to make the wood flexible. For a finish, Josef sprays on one coat of lacquer, then a coat of clear epoxy for a durable, high-gloss look.

D.

E. Magazine Rack Vanity

Framing, plumbing, electrical work, trim—Bob Hadzor, of Syracuse, New York, did them all as part of his bathroom re-do. His pride, though, is the red oak vanity he designed and built. Capped with a 1 1/16" red oak top and backsplash, the oak plywood base features a built-in "library" for books and magazines—easy to reach on the fixture side.

Bob edge-joined the top stock as well as the ¾ oak door panels, and joined the frame using open mortise-and-tenons. Two coats of filler and five more of polyurethane finished the top. Bob says he spent $300 for the entire vanity, including sink and faucet, which proves that woodworking can be satisfying as well as economical.

E.

F. Trammel-Routed Chest

With a router and trammel attachment, woodworker Rudy Kouhoupt of Bridgewater, New Jersey, added the front panel floral carving to this traditional pine chest which measures 45"×20½"×17½" high. For the top and ends of the chest, and for the front panels, he rabbeted the edges of 1×12s, then edge-joined them shiplap fashion. The front panels fit into rabbets routed in the frame.

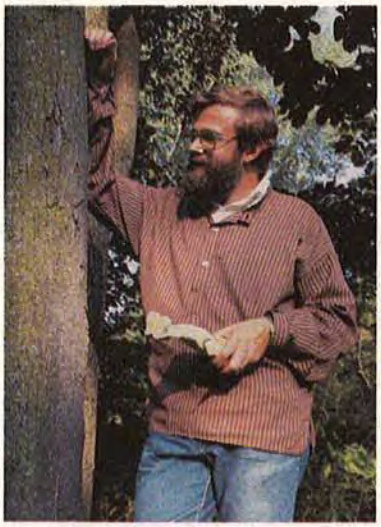
For the carving pattern, Rudy first drew his design on quadrille-lined paper, then marked the center points on the wood. The router and trammel made the carving nearly an effortless task, and with great results. He stained the project with Tungseal "fruitwood," then finished it with polyurethane for long-lasting durability and ease of maintenance. ■

Submit Your Projects:
Send a 35mm color slide, with the project as the focal point in a simple background. No people, please! Include a capsule description—materials used, special joinery techniques, finish, for example. WOOD will pay $25 for published projects. Unless you enclose a self-addressed envelope with sufficient postage, your slides will not be returned.

Send to:
Project Showcase
Better Homes and Gardens®
WOOD Magazine
Locust at 17th
Des Moines, IA 50336

F.

SCANDINAVIAN-STYLE figure carving



Born of Norwegian-American parents near Hoffman, Minnesota, Harley Refsal, 40, shown leaning against a basswood tree, above, has been carving since childhood. After majoring in language at Augsburg College in Minneapolis, then studying in Norway and Sweden, he began carving seriously.

When he's not enjoying his favorite hobby, Harley teaches Norwegian and advises foreign students at Luther College, Decorah, Iowa, where he, his wife Norma, and sons Carl and Martin make their home. Each summer, Harley teaches woodcarving through the Norwegian Craft Workshops of Vesterheim, the Norwegian-American Museum in Decorah.

Drawing on memories of rural Minnesota, Harley Refsal carves rough-hewn figures depicting the hardships of Norwegian immigrant life in the Upper Midwest.

A big basswood tree grows beside the stream that swirls past Harley Refsal's home on the outskirts of Decorah, Iowa. The tree may have been there in 1865 when the town was a gathering place for newly arrived Norwegian immigrants seeking land to clear and farm.

Harley doesn't know the tree's age for sure, only that ones like it provide him the wood to carve figures of the rugged, hardworking Norwegians that passed that way. His Scandinavian-inspired carving style portrays those early homesteaders as well as individuals he remembers from childhood.

"I draw on the immigrant and rural life of the Upper Midwest for my work," the carver says. "I don't carve sea captains or fishermen. I carve ice fishermen, inland folks, a farmer who incidentally happens to

Photographs: Bob Calmer; Jim Elder

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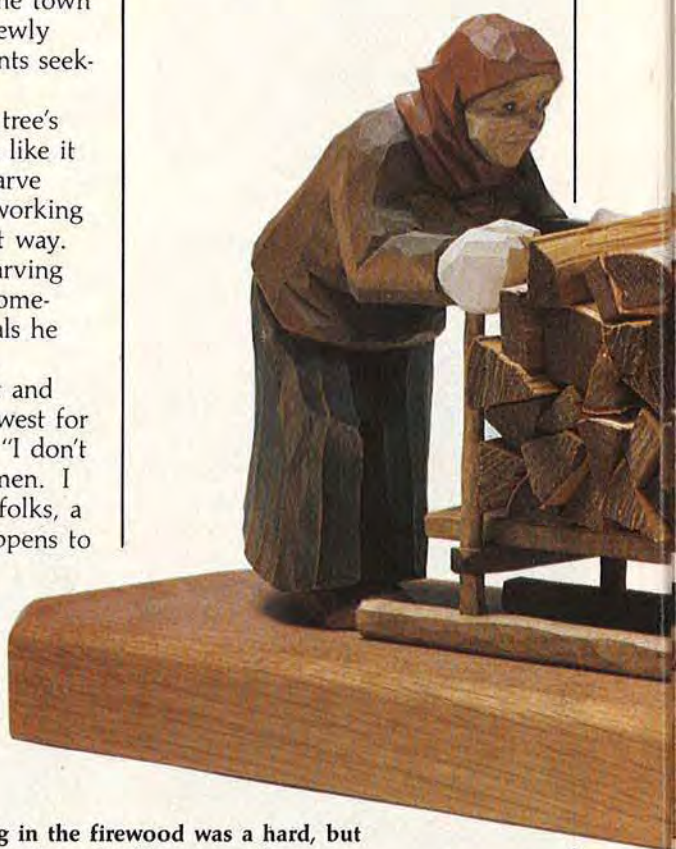


Bringing in the firewood was a hard, but necessary chore for Norwegian farmers. Harley captures the effects of their toil with a minimum of knife cuts.

be fishing. My carving style lends itself to the rough-hewn individuals who settled this part of the country. I feel that a non-refined kind of carving lends itself to non-refined sorts of people—chiseled faces of farmers at an auction, a fire-and-brimstone preacher—older people with rich lines. I believe just a few lines can say a great deal."

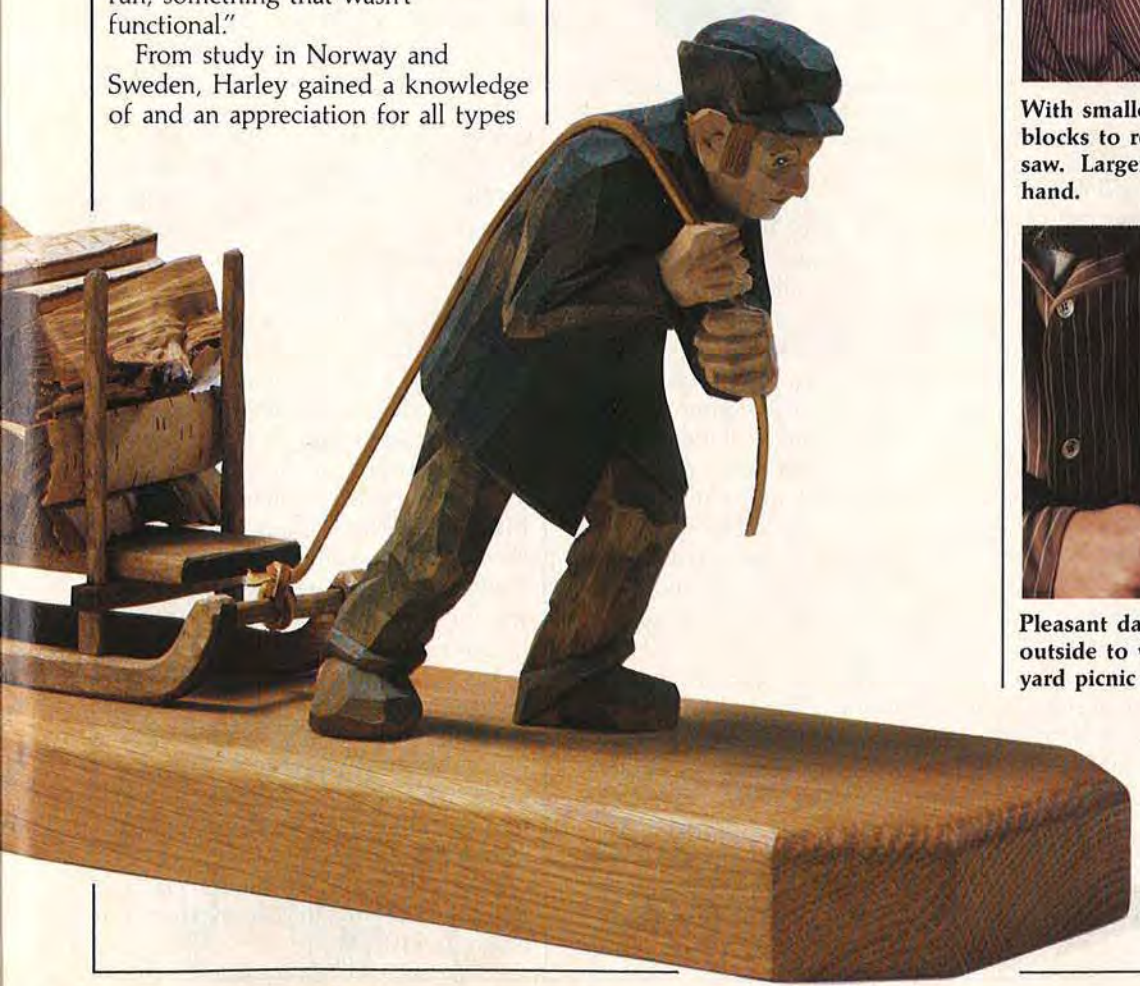
Blending the Old World and the New

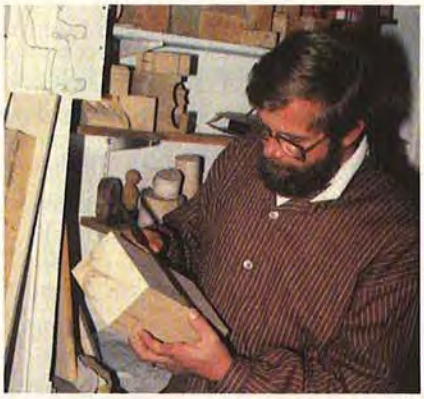
Refsal's type of flat-plane carving, so-called because it leaves the small, flat plane of each cut exposed, comes from the rustic and rugged peasant carving found in Scandinavia and the areas of this country where immigrants settled. According to Harley, it's a style only about 150–200 years old, which to the whole of Scandinavian carving is relatively new, "because it represents enough leisure time to be able to carve something just for fun, something that wasn't functional."

From study in Norway and Sweden, Harley gained a knowledge of and an appreciation for all types of Scandinavian carving. And when it was time to focus on a style he felt comfortable with, he chose a blend.

"I guess I wedded a Scandinavian style to Scandinavian-American material," he explains. "I've combined style from there with subject matter from here. I've not been interested in duplicating the kind of Norwegian folk carvings I've seen in Europe because I'm not as familiar with those subjects as I am with rural life around here.

"Having been born and raised on a farm in a Norwegian-American community," Harley continues, "the people I know best are farmers and laborers, immigrant figures. I'm very much a product of the immigration. Norwegian was spoken in my home. My grandfather lived in Minnesota for 56 years and died never having learned English."





With a carving pattern tacked to the wall, Harley chooses an appropriate-size block from his stockpile.

With smaller figures, he can saw the blocks to rough shape on his bandsaw. Larger ones require doing it by hand.

Pleasant days bring the woodcarver outside to work the figure. A front-yard picnic table is his favorite spot.

Continued

Refining a Carving Style

To the uninitiated, flat-plane carving may appear to be unsophisticated, but it takes a developed skill and a disciplined hand. And, Harley continually seeks to further refine it.

According to Harley, "In carving there's a stage where you strive to make a person look like a person every time—an old woman look like an old woman every time you do it, for instance. I can do that, but now I'm trying to conserve, to do it with fewer and fewer cuts."

As Harley refines his technique, he finds himself gradually using fewer tools. His workshop wall displays three dozen or more carving tools, yet more than half of them go unused. He rarely uses more than five tools on a carving, and ordinarily just a gouge, a carving knife, and a small V-tool. After more than 10 years of carving, this represents "coming full circle" for Harley, since he began with nothing but a pocketknife, a wood chisel his father had made from an old file, and an X-acto knife with a few blades.

Basswood by the Block

Just as a stone sculptor wouldn't do a Norwegian bachelor farmer out of white marble, neither would the Decorah woodcarver make him out of black walnut or cherry. He prefers basswood.

"Basswood lends itself very, very well to detail," Harley explains, "because of its uniform grain. Some pines have a light/dark, light/dark coloration when you look at the end grain. That light/dark translates to hard/soft when it's carved. Basswood doesn't have hard/soft, it's more like carving hard soap."

Harley has put up and dried a lot of local basswood, and with good results. He's convinced that northern basswood, air-dried, is the best carving wood. Now, though, he buys it from an Iowa supplier, paying two cents a cubic inch for 4″×4″, 5″×5″, and 6″×6″ blocks. Buying wood gives him more time for carving, and the money is well spent.

This Norwegian farmer with milking stool might have been his neighbor in the immigrant community where he grew up.

Hands-On Carving

When he begins a carving, Harley first sketches a silhouette of the character on paper, makes a pattern, and transfers the shape to a basswood block. He then uses a bandsaw to rough out the approximate shape if the figure is under 6″ in all dimensions. With larger figures too big for his bandsaw he removes the excess wood with a coping saw. Sometimes, on complicated figures he'll simply hand-hold it and use a short palm gouge to cut away wood.

After roughing, Harley starts the knife carving, hand-holding the piece and occasionally using his knees as a vise. He carves away from himself for safety. And the way he holds the knife makes a difference. Harley grasps the knife handle in his right hand (his power hand) and pushes and guides the blade with the thumb of his left. That way, he always has control of the blade.

Harley's style of flat-plane carving requires him to carefully decide what each cut produces: "The marks that shape the piece always remain. They stay in there as part of it. When I make a cut to get away wood, I also may be putting a fold in the character's pants, for instance. I don't shape and then go around and put in knife marks. My knife marks do double-duty."

A small, gouge-like V-tool incises definitions on his carvings, but the lines are not overworked.

Turning the figure in his hands, he looks it over, announces it completed, then turns to finishing.

Understating for Effect

"If you see carving geared for a tourist market, they have bright, bright colors," Harley notes. "But I think that the life of the people I carve just wasn't that colorful."

Harley and his wife Norma thin acrylic paints with water to the consistency of a wash. After painting, a process Norma now does regularly, and drying, she dips the carving in a mixture of boiled linseed oil and an umber antiquing colorant. The oil mixture not only penetrates and preserves, it produces a shadow effect.

Some of Harley's pieces stand alone, while others rest on a base he selects to fit the carving: "An immigrant, a homesteader, that type of figure calls for something rustic, like a chunk of log. A subject more controlled, such as the schoolmaster or the nurse, demands a base that reflects their indoor environment. Occasionally an exception is made when the buyer requests a specific base material, or if I want to accent the rough-hewn look."

His carvings have brought him recognition, earning blue ribbons at fairs and woodcarving exhibitions. Harley sells his work at Scandinavian festivals and by commission, and that has bought some economic satisfaction. Based on an hourly rate of $10 he set for himself, his individual immigrant carvings now begin at $100.■

carving the Refsal horse

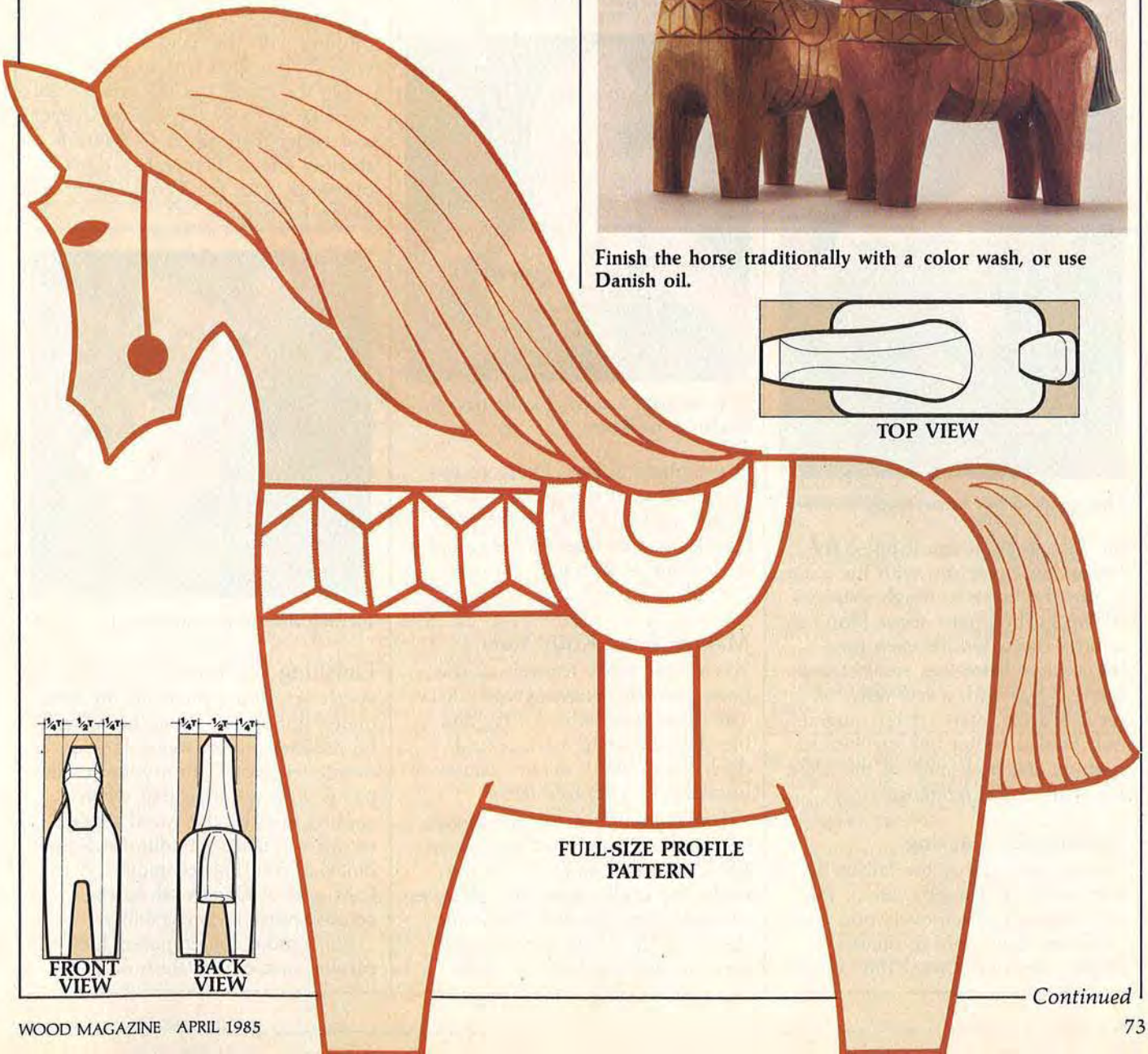
Since the time of the Vikings, Scandinavian carvings have featured creatures of power. The plundering seafarers adorned their ships with fierce dragon heads. Inland, carvers chose more domestic symbols of strength—the goat, the rooster, and the horse. Harley Refsal's horse evidences power and strength in the thick, arched neck and squat, muscular body. His horse resembles one you could have found in 18th-century Norway or Sweden.

Design: Harley J. Refsal Photographs: Jim Elder; Scott Little

Print this article

Finish the horse traditionally with a color wash, or use Danish oil.

TOP VIEW



FULL-SIZE PROFILE PATTERN

FRONT VIEW

BACK VIEW

Continued

The Materials You'll Need

To complete the horse, you'll need the following tools and supplies:

- a coping saw, saber saw, or band saw to rough out the shape;
- a carving knife or an X-acto knife;
- a small V-tool, or a V-tool blade for an X-acto knife;
- acrylic paints and Danish oil;
- a 2¼"×6¾"×6½" basswood block, or three ¾" clear-pine boards glued up to thickness with white or yellow glue (be sure the grain of all pieces runs in the 6½" dimension).

Getting Started

First trace our full-size horse pattern to heavy paper. Cut out the pattern, then trace the outline directly

The roughed out horse ready to carve

on your stock, lining it up so the legs of the horse run with the grain.

Saw the horse to rough shape as shown in the photo above (you can remove the wood between the figure's two front legs and between the rear legs with a saw now, or carve it away later). After roughing out, mark a center line on the top, bottom, and both ends of the horse for symmetrical reference.

Shaping the Carving

Starting from either the tail or the feet, use long, smooth cuts of the carving knife to remove wood and work the figure into a rounded shape. Working toward the horse's head allows you to gain confidence and control, and to develop a sensitivity for the feel of the grain under the knife. Remember, that while Harley places the work between his knees during carving, until you've gained experience, it's wise to clamp your figure in a vise.

Try carving as he does: hold the knife in your power hand (right hand if right-handed, left if left-handed) and push and guide the blade into the wood with the thumb of your opposite hand. Carve away from yourself and let your thumb do the work.

Focus on removing wood from the areas of the horse's head, neck, mane, legs, girth, and tail as shown

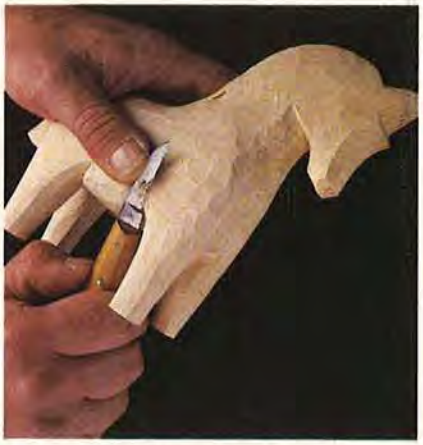
Shaping with a carving knife has rounded the figure

in the photo above. Don't go too far, you'll want the smaller, flat knife marks to finish up the piece. Check for roundness of the figure by looking at it straight on from the tail.

Making Final Knife Cuts

You're now ready to even up the horse with flat, shaving-type cuts. The secret here is to *not* try and blend in the knife marks. And don't worry about details such as hooves—it's a stylized horse.

Use the knife to cut in features such as the saddle, the lines where the legs, mane, and tail join the body, the bridle, eyes, etc. A series of small chips cut with the knife, shown in the photo above, right, serve to define a line.



Evening up with flat knife cuts

Accentuating with the V-Tool

Hold the V-tool like you did the knife, guiding it with a thumb, but pushing with the hand it is in. Start with shorter lines first to learn.

On the mane and tail you'll want to make some of the gouges deeper and wider than others to create a shadow effect. Remember, don't overwork with the V-tool. Refer to photo for details.

Incising lines using the V-tool

Finishing the Horse

As shown in the photo of the completed horses, the Refsal horse can be finished in two ways. If you decide to color it, thin your acrylic paints with water so that when applied they let the wood show through. This is a traditional Scandinavian coloring technique. A light coat of Danish oil on the colored horse adds durability.

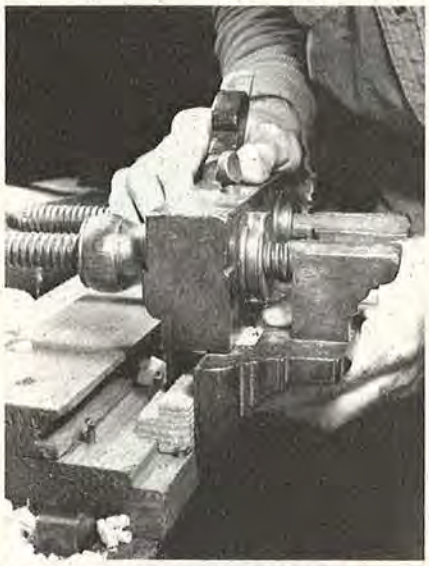
For a more contemporary-looking carving, use only Danish oil.■

Continued from page 54

The Old Hand Ways

The long jointer plane uses its great length (around 30") to keep the iron from cutting wood in the valleys until the hills are all brought down. When the shavings emerge from the plane unbroken for the entire length of the stock being worked, the surface must be level and true (or close to it). It is tradition in many shops to tack the longest unbroken shaving on the wall over the bench. Our current ribbon runs 27 feet, 3 inches.

One other specialized plane that the joiner needs is the *plow*. The adjustable plow cuts a groove into the wood a given distance from one of the edges. By making a rectangular framework of this grooved stock, he can slip broad panels into the spaces and cover as large an area as necessary. This is panel frame construction.



The joiner needs his planes and bench to make the doors, windows, and casings for the house.

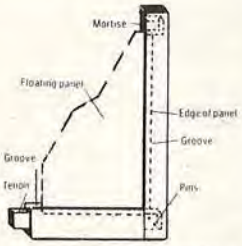
The Joiner's Work Allows for Shrink

The shrinking and warping of Shakespeare's wainscot stem from both the nature of wood and human nature as well. The purpose of panel frame construction is to allow the inevitable shrinking and swelling of the broad panels to take place harmlessly within the grooves cut for them in the frame. Only when the work is done hastily with unseasoned stock will the shrinkage be so great that it will pull free of the grooves and "warp, warp."

Shakespeare may not have been entirely displeased with the work of his local joiners. In *A Midsummer Night's Dream*, one of the "rude mechanicks" is a joiner named "Snug."

The tools of the joiner may be specialized and sophisticated compared to those of the carpenter. They remain, however, tools and not machines. Not machines like the lathe, the heart of another ancient woodworking trade, which we'll turn to in our next installment of the Old Hand Ways. ■

the American Woodworker



- We would like to take this opportunity to announce the publication of a new magazine for woodworkers. As you can see by the logo, our name is THE AMERICAN WOODWORKER. We are a very diversified publication printing a variety of articles including both projects and subjects of general interest to woodworkers. Our project sections are produced on three levels; beginning, intermediate and advanced. They include everything from a shaker candle holder to a Chippendale lowboy. Styles are both traditional and contemporary.
- The size of the magazine is a large 9" X 12" printed on a heavy glossy stock. It contains both photographs and easy to read drawings of all different styles of furniture and projects.
- In addition to other nationally known writers, there will be two regular columns; one written by Ernie Conover of The Dunbar-Conover Woodworking School. He will answer your questions about any woodworking subject. The other is a column about finishing written by George Frank, one of the world's leading authorities. He will answer your questions about finishing.
- There will be visits to interesting people and interesting places to discover what others are doing in woodworking. Also included are instructional articles including everything from quartersawing to inlaying, articles about tools, both hand and power, and much more.
- There is a section about manufacturing techniques including how to make and use jigs and fixtures. We also have historical articles about both people and furniture.
- There are show dates and locations, supply sources, and book reviews. THE AMERICAN WOODWORKER is dedicated to pure woodworking. There are no articles on home repair, etc.
- From time to time there will be informative articles that are unusually helpful to the woodworker. In our first issue there is an article explaining how to transfer a photograph or drawing to a piece of metal. This interesting technique can be used to make plaques, canister sets, inlays for various woodworking projects, etc.
- THE AMERICAN WOODWORKER will be published quarterly the first year. The subscription price is $10.00, with the first issue out in March 1985. We have been woodworkers all our lives and hope that you will join us for an entertaining experience. Check us out if you like. We are old members of the Hendersonville business community, belonging to the Chamber of Commerce. If you are not 100% satisfied with your subscription, your money will be refunded. Use the coupon or just send your name and address along with your check or money order for your subscription. We guarantee you'll love it.

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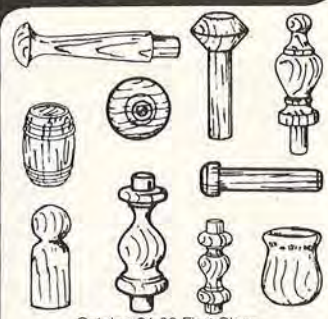

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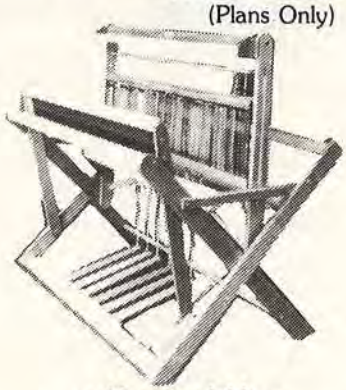

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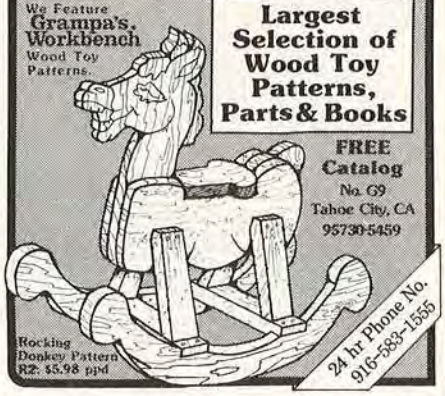

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Continued from page 50

tissue box cover

Cutting and Applying the Veneer

Note: If you haven't done any veneering work before, read the veneering article beginning on page 45 before going any farther. It contains information you need to know about. Also, refer to the cutting diagram to help lay out your cuts and to get the overlap where needed.

1 To mark the box ends for veneer placement, find and mark the center of the bottom of each end. Then, run layout lines from the center point to each upper corner to form a "V" as shown.

2 Set the box on end on a piece of veneer and trace its outline. Use the same procedure described in step 1 to mark the "V" on the veneer.

3 Using a straightedge and an X-acto knife, cut out the two V-shaped end pieces (1). Now, mark and cut the other end pieces (2, 3) to shape as laid out in the cutting diagram. Cut the pieces slightly oversized for trimming later.

4 Arrange the end pieces face up in the arrangement they will be in when glued to the box ends. Then, using masking tape, tape the pieces together. Apply contact cement to the back of the veneer pieces and to the box ends. Carefully place the veneer in position and trim the excess.

5 Mark and cut side pieces (4) to exact length, and to width plus ¼". Glue and apply the pieces. Mark and cut the outer side pieces (5) and apply them. Trim the excess.

6 Mark and cut the top inner pieces (6), then glue and apply them. Do the same for the top outer pieces (7). Trim the excess.

7 Finish-sand all surfaces with 220-grit sandpaper, then stain and apply finish. ■

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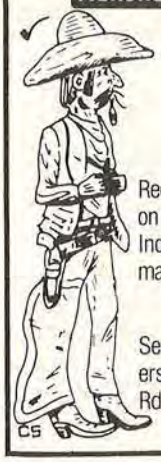

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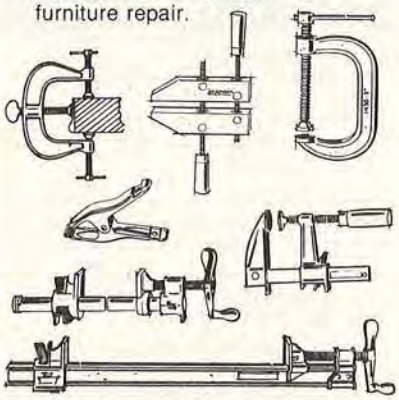

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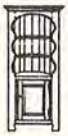

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Continued on page 80

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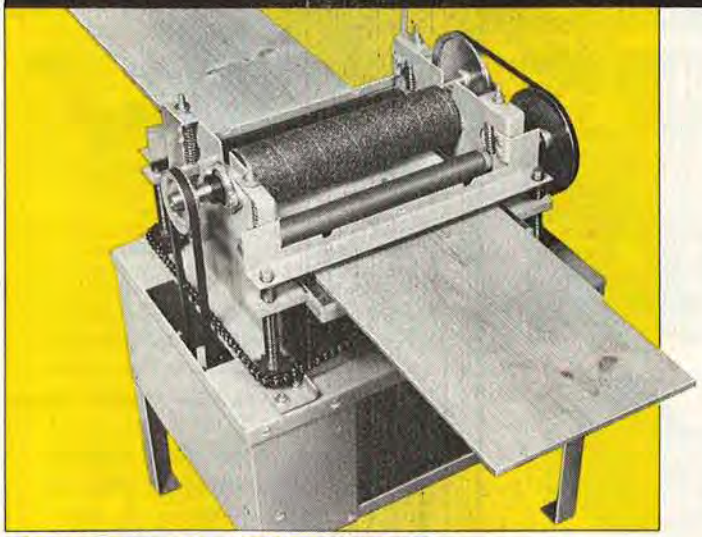

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Continued from page 79

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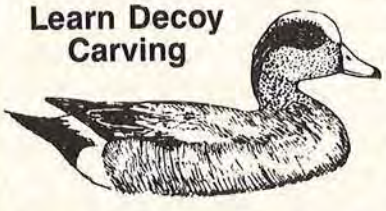

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TOOL BUYMANSHIP

Continued from page 57

TABLE SAWS

Buymanship Note: If you're considering a stationary saw, we recommend at least a 1-hp motor, and preferably a 1½-hp motor, to power it.

When studying the horsepower ratings of the various models, don't pay too much attention to the *developed horsepower* figures touted by some manufacturers. This rating refers to the maximum amount of horsepower a motor can develop under a full load. If you were to run one of these motors at that horsepower for a prolonged period of time, you would quickly burn it out. The *continuous horsepower* rating tells you that the manufacturer has built the motor to run under load at that horsepower for prolonged periods.

Open Drip-Proof or Totally Enclosed. Of the two types of motors, the open drip-proof is much more common but not as good as the more-expensive totally enclosed type, which is sealed against workshop dust. Make sure either type has a reset button, which signifies that the motor has an overload-protected switch.

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Sears has recently introduced an electronically controlled model that may set an industry trend. With this product, after educating yourself for a few minutes, you can raise and lower the blade and set it to the desired angle by pushing several buttons. Small motors inside the saw housing do the work the elevation and tilt wheels used to do. We've tried one of these saws, and it performed well for us.■

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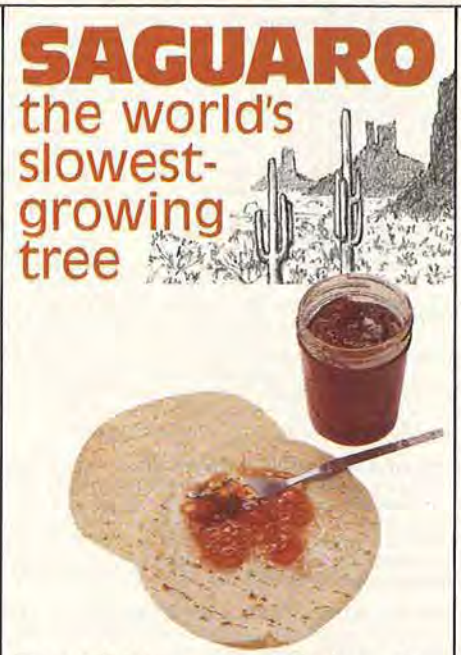
WOOD ANECDOTE

SAGUARO
the world's slowest-growing tree

Yes, the saguaro (pronounced sa-WAR-o) cactus, found in the southwest deserts of the United States, is a tree. In fact, the saguaro (*Cereus giganteus*) is a hardwood. But it grows so slowly and has such weird wood that the lumber industry didn't even bother to snub it officially.

How slow is slow? Saguaros, at 8 to 10 years of age, are barely 4" tall. By age 30 they reach about 3¼ feet! After that, growth accelerates, and a saguaro can add 4" per year. The largest of these cacti may be 50' tall and well over 200 years old.

The wood, once it's discovered under the soft, fleshy green skin-like bark, is a composite of vertical rods about 1" in diameter, much like bamboo poles. There aren't many of them—the saguaro is roughly 98 percent water by weight, although the content varies by season. Like a sponge, the saguaro expands and contracts in proportion to the amount of water it is holding.



Desert Indians make jelly from the saguaro's fruits, drink its juices, and build fences from its wood.

Print this article

Gold seekers, on their way to California in the rush of 1849, appreciated the much-needed water they found inside the saguaro. To the Papago and Pima Indians, who gather its fruits for sweet jelly, its water for drink, its seeds for chicken feed, and its wood for fence poles, the saguaro has long been a staple. Arizona has adopted the saguaro blossom as its state flower.

One of nature's most unique plants, the towering saguaro is a desert landmark signaling sustenance to those who know its secrets. Offering food, water, and wood, it is famed in Southwestern folklore and noted in the annals of the Frontier. Rarely has one plant played such a dominant role in the cycle of life in such an easygoing style. ■

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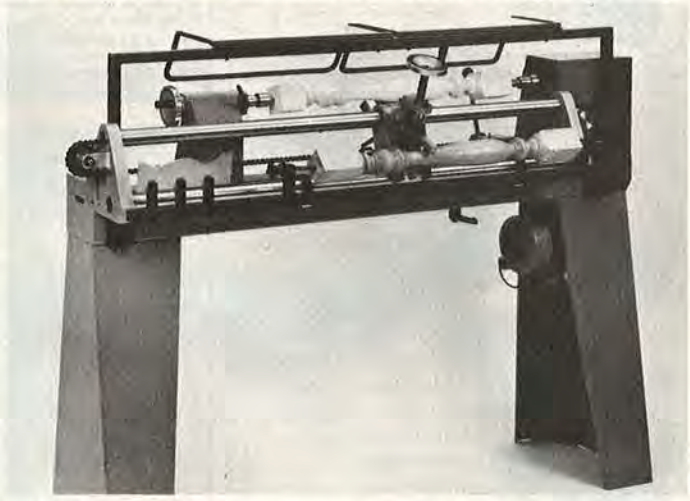

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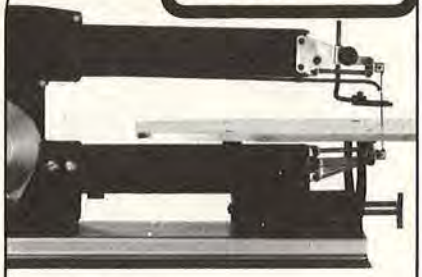

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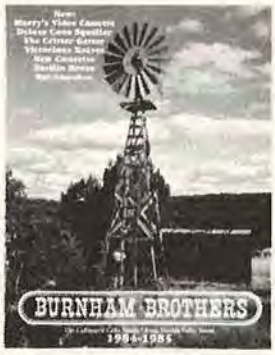

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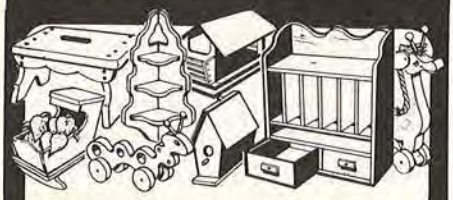

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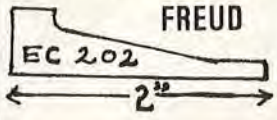

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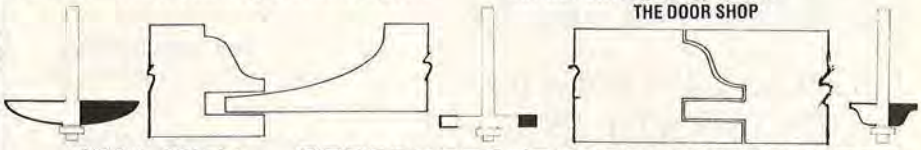

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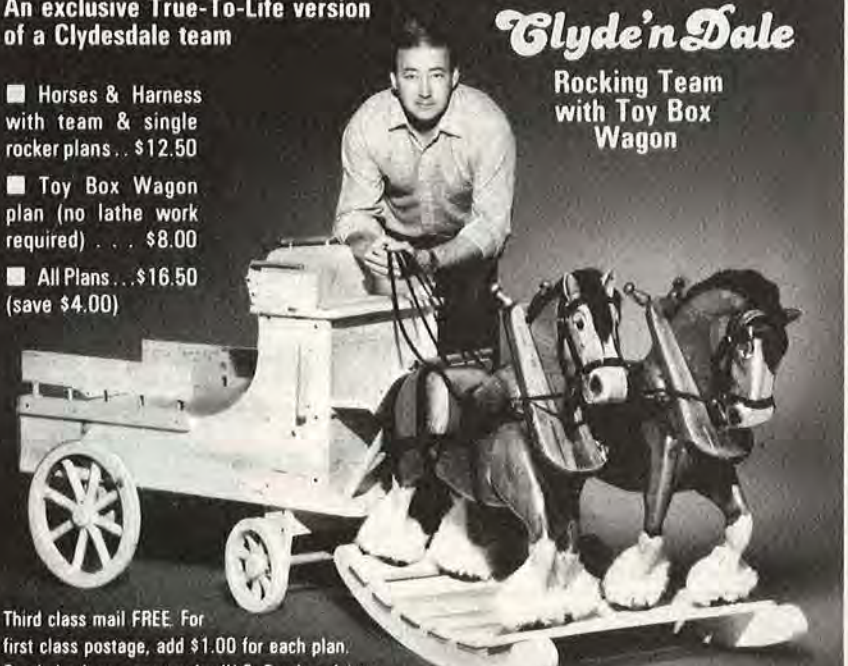

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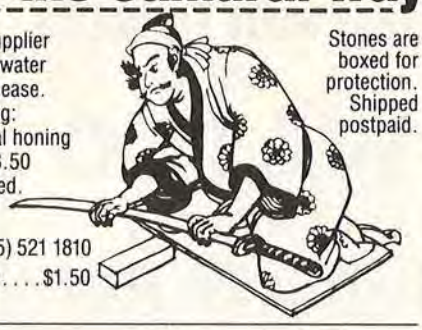

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1. What is the age of the head of your household?
   - A. ☐ 18-24
   - B. ☐ 25-34
   - C. ☐ 35-49
   - D. ☐ 50-64
   - E. ☐ 65 or older
2. What is the highest level of education reached by the head of your household
   - 1. ☐ Graduated college
   - 2. ☐ Attended college
   - 3. ☐ Graduated high school
   - 4. ☐ Attended high school
   - 5. ☐ Did not attend high school
3. Do you live in:
   - F. ☐ A large city
   - G. ☐ A suburban area of a large city
   - H. ☐ A small city or town (not a suburb)
   - I. ☐ A rural area
4. Approximately how long do you expect to keep this issue of *Better Homes and Gardens Wood?*
   - 6. ☐ Less than a month
   - 7. ☐ 1 to 3 months
   - 8. ☐ 3 to 6 months
   - 9. ☐ 6 months to a year
   - 0. ☐ More than a year
5. In which of the following categories is your annual household income before taxes?
   - J. ☐ Under $15,000
   - K. ☐ $15,000 to $19,999
   - L. ☐ $20,000 to $24,999
   - M. ☐ $25,000 to $34,999
   - N. ☐ $35,000 to $49,999
   - O. ☐ $50,000 to $74,999
   - P. ☐ $75,000 to $99,999
   - Q. ☐ $100,000 or more
6. Within the past 12 months, have you bought or ordered merchandise from mail order companies?
   - 1. ☐ Yes
   - 2. ☐ No
7. Within the past 12 months, how much do you think you spent on ordering merchandise from mail order advertisers?
   - R. ☐ Less than $50.00
   - S. ☐ $50.00 to $99.99
   - T. ☐ $100.00 to $149.99
   - U. ☐ $150.00 to $199.99
   - V. ☐ $200.00 to $300.00
   - W. ☐ Over $300.00
   - X. ☐ Nothing

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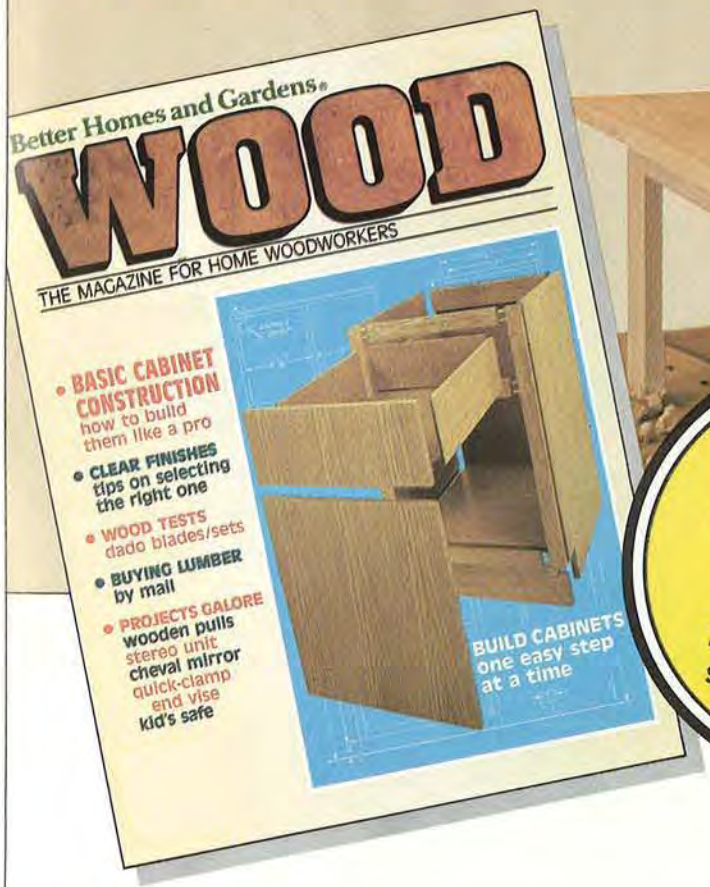
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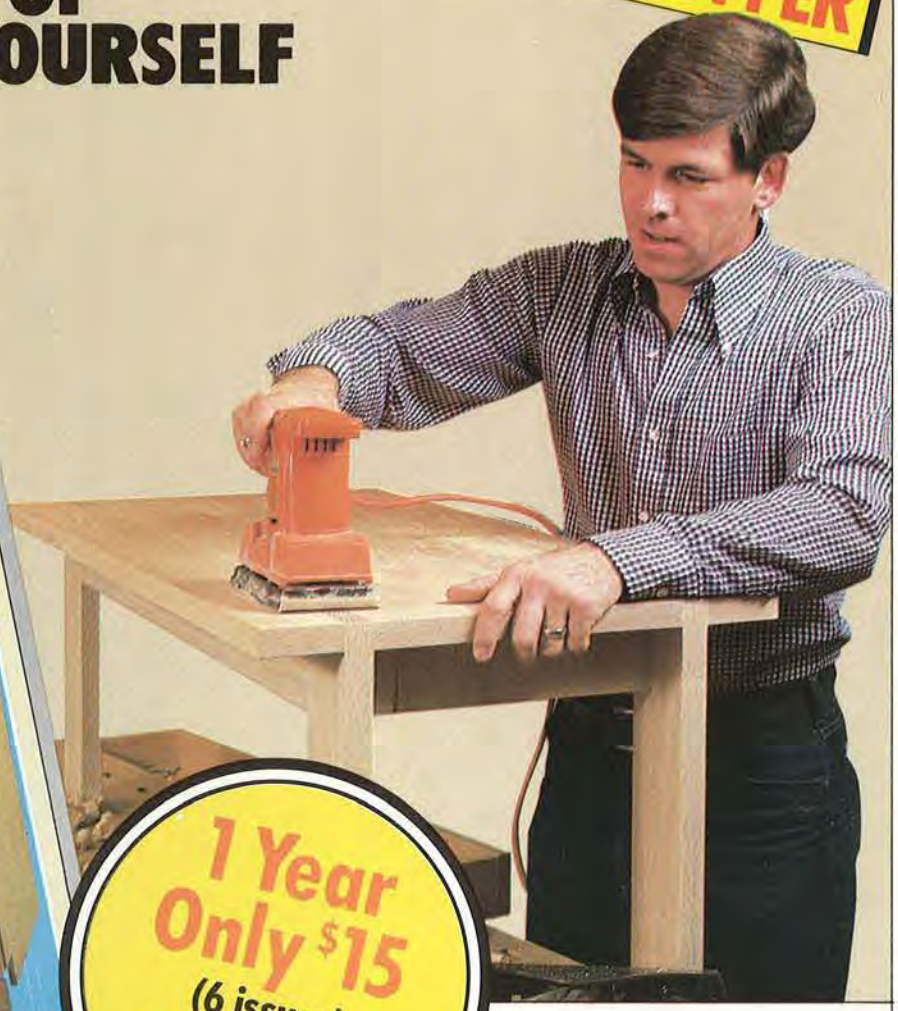

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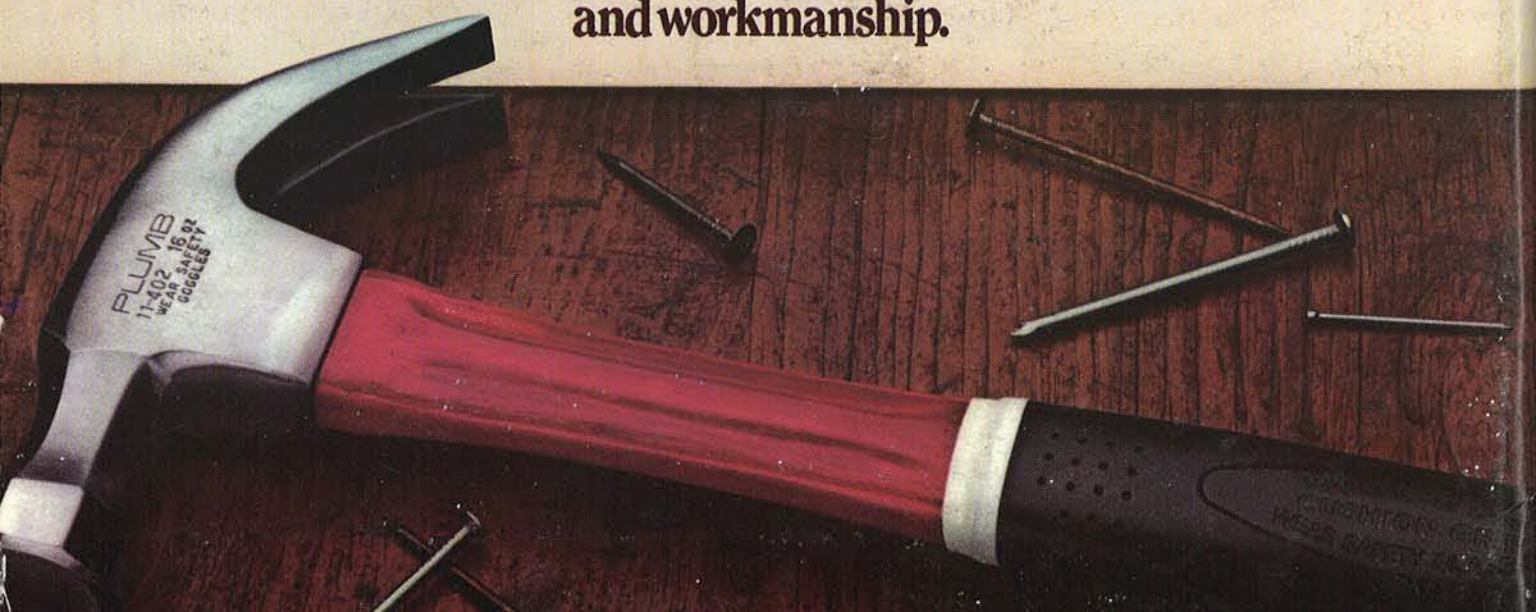
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